A Critical Occupations List for Migration in Spain

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Abbreviations

AI	Artificial Intelligence
CNO-11	Clasificación Nacional de Ocupaciones 2011
COL	Critical Occupations List
ECV	Encuesta de Condiciones de Vida
EES	Encuesta de Estructura Salarial
EPA	Encuesta de Población Activa
FGDs	Focus Group Discussions
GCM	Global Compact for Safe, Orderly, and Regular Migration
GECCO	Gestión Colectiva de Contrataciones en Origen
GSPs	Global Skill Partnerships
HR	Human Resources
ICT/IT	Information and Communication Technology / Information Technology
ILO	International Labor Organization
INE	National Statistics Institute / Instituto Nacional de Estadística
ISCO-08	International Standard Classification of Occupations 2008
KIIs	Key Informant Interviews
LAC	Latin America and the Caribbean
MIR	Resident Medical Doctor / Médico Interno Residente
MSMEs	Micro, Small and Medium Enterprises
SEO	Search Engine Optimization
SEPE	Public Employment Service / Servicio Público de Empleo Estatal
SMEs	Small and Medium Enterprises
STEM	Science, Technology, Engineering, and Mathematics

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This report and underlying analysis were prepared by *A2f Consulting* with editing and additions provided by Jeremy Lebow (Economist) and oversight and guidance provided by Pablo Acosta (Lead Economist), Mattia Makovec (Senior Economist), Luz Stella Rodriguez (Senior Social Protection Economist), Harry Moroz (Senior Economist), and William Wiseman (Manager for Latin America and the Caribbean) all from the Social Protection and Labor practice at the World Bank. The document also benefited from peer review by Matthew Dornan (Senior Economist) and comments from Eric Zapatero Larrio (Senior Social Protection Specialist) and expert consultants on labor and migration issues: Alberto Ocampo, Olga Lucia Romero, Diana Isabel Londoño, and César Augusto Merchán.

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This analysis was conducted between March and September 2025. The findings, interpretations, and conclusions expressed in this document belong to the authors and do not necessarily reflect the views of the World Bank's Board of Directors or the governments they represent.

Executive Summary

The study provides an in-depth analysis of labor market imbalances in Spain to inform evidence-based skilling and migration policies, including the development of structured migration pathways with Latin American countries. While Spain faces persistent labor shortages in several sectors, many Latin American countries continue to struggle with limited access to quality employment opportunities. Strengthening skills development in Latin America can help address both challenges by improving outcomes in origin-country labor markets while expanding the pool of workers with skills relevant to Spain, underscoring the need for coordinated approaches that link education and training with migration policy. Tools like Global Skill Partnerships (GSPs) – in which origin and destination countries coordinate and jointly invest in training and migration needs – can support mutually-beneficial outcomes, provided they are grounded in accurate and up-to-date information on labor market and skills imbalances.

This report provides an analytical framework to construct a Critical Occupations List (COL) in Spain based on a robust two-pronged approach that has been successfully applied in other countries. This methodology integrates a quantitative "top-down" statistical assessment to pinpoint occupations under pressure based on labor market indicators with a qualitative "bottom-up" analysis involving consultations with employers and institutional stakeholders. These complementary evidence streams are then consolidated to identify a list of occupations difficult to fill in the Spanish labor market. The COL offers a robust basis for aligning migration policy and skills training investments, serving to inform the design of GSPs and to support broader labor market planning in Spain.

The top-down analysis quantitatively identifies critical occupations in Spain based on available labor market data. It includes data from Spain's Public Employment Service (SEPE, *Servicio Público de Empleo Estatal*) and job vacancy data, utilizing indicators covering employment contracts, unemployment, job postings, wages, and required experience. SEPE data, based on administrative records of new contracts and unemployed individuals, reflects employment flows and unemployment patterns, and was accessed for the years 2021 to 2024. Lightcast data, aggregated from job postings, provides insights into labor demand, including vacancy volumes and wage trends, and was accessed for the years 2019 to 2024. Data from other surveys conducted by Spain's National Institute of Statistics (INE) is used for consistency checks and comparisons at higher levels of occupation groups.

A structured, multi-step, top-down methodology was used to generate a statistically grounded list of potentially critical occupations. This quantitative phase involved developing specific indicators, setting statistical thresholds, conducting correlation analysis to remove redundancy, and performing robustness checks to ensure the reliability of the generated top-down COL. Occupations were flagged as potentially critical if they exceeded defined thresholds in at least 50% of the available indicators. Robustness checks, including removing one indicator at a time to test its impact on the final list, confirmed the internal consistency of the methodology and ensured that results were not overly dependent on any single indicator. The final top-down COL included 96 occupations which were then presented to stakeholders for discussion and validation during the bottom-up analysis.

Complementing the quantitative approach, the bottom-up analysis gathered qualitative insights from employers, industry stakeholders, and policymakers. These insights were collected through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) to validate and contextualize the preliminary findings. This phase aimed to bridge the gap left by quantitative data by capturing sector-specific recruitment challenges, evolving skill requirements, and institutional barriers directly from those involved in hiring and workforce planning. While the construction of the top-down COL was based entirely on occupational codes, these were subsequently classified into sectors to guide the structure of the FGDs.

Consultations covered sectors including (i) Construction, (ii) Manufacturing, (iii) Agriculture, (iv) Restaurants, Customer Service and Hospitality, (v) Scientific, Intellectual, and Creative Services, (vi) Healthcare and Education, and (vii) Care, Cleaning, and Housekeeping.

The final COL was developed through the integration of top-down and bottom-up findings, ensuring that the list reflects both statistical labor market imbalances and realized experiences with recruitment challenges. A structured consolidation matrix was applied to guide the triangulation process, with a strong weight given to the qualitative evidence provided during stakeholder consultations. This consolidation exercise resulted in a final list of 54 critical occupations. These occupations span a wide array of sectors and are distributed across ISCO-08 (International Standard Classification of Occupations 2008) major groups, with the largest shares falling under Craft and Related Trades Workers (13 occupations), Professionals (12 occupations), Elementary Occupations (8 occupations), and Skilled Agricultural, Forestry and Fishery Workers (6 occupations).

Employers in the construction sector largely validated the preliminary list of critical occupations. Roles like supervisors, builders, mechanical repairers, site operators, heavy truck drivers, and specialized mechanics were deemed particularly hard to fill. Additional critical roles not initially captured in the top-down analysis include high-tension line installers and skilled trades like bricklayers, plumbers, and carpenters. Employers noted significant skills gaps, including weak practical training, a perceived decline in work ethic, and a need for more skilled personnel in specialized electrical work and quality control in areas like aeronautics. Despite institutional barriers, employers expressed strong openness to hiring migrant workers, recognizing their essential role in filling difficult positions and reporting successful experiences, particularly with Latin American workers, who were often described as reliable and adaptable.

Manufacturing sector consultations confirmed some occupations identified in the top-down analysis as difficult to fill, such as those linked to plant and machine operation, and identified additional shortages in various skilled trades. Roles such as metal processing plant operators and mechanical machinery assemblers were consistently validated by employers as experiencing recruitment challenges. Additional critical roles not initially captured in the top-down analysis include welders and industrial machinery mechanics. Employers highlighted both technical and soft skills gaps, pointing to limited experience with modern manufacturing technologies, a decline in manual skills, and challenges related to reliability, adaptability, and digital literacy, particularly among older workers. While there is widespread willingness to employ migrant workers in these roles, legal and bureaucratic barriers were reported as a major constraint, particularly for small and medium enterprises lacking dedicated human resources (HR) capacity.

Agriculture, livestock, forestry, and fishing sector consultations also validated the preliminary list of critical occupations. They validated shortages for animal and mixed crop producers, forestry workers, and inland and coastal fishery workers, and further identified shortages in agricultural technicians, deep-sea fishery workers, and livestock and crop farm laborers. A widespread gap in both technical and soft skills was reported, requiring employers to invest heavily in internal training, with specific technical needs noted in phytosanitary management, pruning, machinery operation, and for fishing roles, theoretical licensing gaps without practical experience. Employers rely heavily on migrant workers for harvesting, fishing crews, and operational forestry roles, facing ongoing bureaucratic and regulatory challenges in formal hiring despite positive experiences with various nationalities.

In the restaurants, customer service, and hospitality sector, consultations confirmed shortages for cooks, receptionists, and waiters while disagreeing on the inclusion of various other occupations. Employers emphasized persistent difficulties in hiring and retaining staff for these positions, noting widespread turnover and limited availability of qualified candidates. Stakeholders additionally identified restaurant managers as persistently hard to fill. However, stakeholders disagreed on the inclusion of various roles such as kitchen assistants, transport clerks, bartenders, and porters and package deliverers, resulting in them

being exclude from the final list. Gaps in technical competencies were evident in areas such as kitchen equipment handling, digital tools for reception work, and general maintenance operations. A widespread lack of soft skills – such as customer service orientation, stress tolerance, and emotional intelligence – was reported, particularly among younger recruits. Employers demonstrated a strong openness to hiring migrant workers, with Latin American staff often viewed positively, but noted that work permit constraints and difficulties in validating previous work experience or credentials remain key challenges.

The consultations in scientific, intellectual, and creative services identified shortages in various ICT roles, sales professionals, and supply and distribution managers, and emphasized the need for more cross-functional, integrated skill profiles. Critical occupations verified included ICT operations technicians, database and network professionals, and ICT and non-ICT sales professionals. Additional critical occupations identified during consultations included systems analysts, web and multimedia developers, and supply and distribution managers. Various managerial level roles including for finance, human resources, research and development, and business services, as well as positions including bank clerks and financial advisers, were identified as potentially critical but excluded from the final list due to lack of sufficient evidence. Some employers questioned the inclusion of highly specialized roles on the list, noting that many firms, particularly Micro, Small and Medium Enterprises (MSMEs), seek "360-degree profiles" that cover multiple areas of their operations. Significant skill gaps were highlighted, with employers reporting difficulty finding candidates with a mix of technical, commercial, and interpersonal skills, and a general lack of soft skills such as communication, teamwork, and stress management.

Consultations in healthcare and education sectors indicated critical shortages in medical practitioners, nurses, pharmacists, speech therapists and audiologists, and certain specialized teaching roles. The findings suggest that poor working conditions, limited appeal of primary care, and high international demand result in nurses being "almost inaccessible", especially in elderly care. Recruitment difficulties were linked to bottlenecks in training, qualification recognition, and candidate motivation. Additional critical occupations identified during consultations include pharmacists as well as audiologists and speech therapists. While some teaching roles such as special needs and vocational education teachers were verified as facing shortages, skepticism was expressed regarding the inclusion of certain public education roles, like primary and secondary school teachers – for which consulted stakeholders and union reports claim that there is an applicant surplus – and education managers, seen as low-demand roles.[1]

The criticality of domestic housekeepers, home-based personal care workers, and cleaning occupations was widely validated. This challenge is particularly prominent for home-based and institutional settings, with stakeholders citing difficult conditions, irregular hours, and lack of job attractiveness. However, significant skepticism was raised about including management roles for aged care and social welfare services, seen as having high applicant numbers. Additional occupations flagged as hard to fill included domestic cleaners and helpers, as well as cleaners and helpers in offices, hotels, and other establishments. Employers in this sector frequently hire migrant workers, including Latin Americans.

An analysis of the skills required in job postings for critical occupations reveals the cross-cutting demand for management, organizational, and soft skills in addition to technical skills. According to Lightcast data, the most required skills across all critical occupations include business management, English language, and information technology (which span a range of skills including software development, cybersecurity, enterprise architecture, and IT infrastructure). Beyond occupation-specific technical skills such as mechanics, electricity technicians, construction, and nursing, socio-emotional work readiness skills such as planning, preparedness, teamwork, and cleanliness emerge as consistently important across occupations.

[1] See, for instance, the 2022 report by the Central Sindical Independente y de Funcionarios (CSIF), reporting that 209,691 people competed for 17,756 teaching positions through public exams: https://www.csif.es/uploads/articulo/archivosAdjuntos/65c6b05272b93.pdf

This analysis highlights the utility of job vacancy data for identifying job-level skill needs within occupations and to support the design of skills training and labor mobility initiatives, including by studying the overlap in skill needs within critical occupations in Spain and potential origin countries.

Employers across various sectors generally view migrant workers as essential for filling critical occupations which are hard to fill with the national workforce but highlight significant administrative and regulatory hurdles to formal hiring. Many employers reported successful experiences with migrant workers, including those from Latin America. Despite recognizing the necessity and value of migrant labor, employers consistently highlighted significant administrative and regulatory obstacles to formal hiring, such as the difficulty and delays in obtaining permits, the non-recognition of foreign qualifications and experience, and complex bureaucratic processes that greatly affect smaller companies. Employers advocated for simplified processes to facilitate legal recruitment and expressed support for regulated migration channels and the integration of migrant workers across all levels of the labor structure.

Institutional stakeholders and policymakers confirmed the existence of widespread labor shortages across Spain and identified various challenges within the current labor migration system. They confirmed that existing migration pathways, including work visas based on the Catalogue of Hard-to-Fill Occupations and seasonal schemes like GECCO *(Gestión Colectiva de Contrataciones en Origen*), serve as tools to address deficits. However, institutional representatives also pointed to significant challenges within the current system, which closely align with those identified in the companion "Institutional Assessment of Migration" report. These include bureaucratic complexity and processing delays, institutional fragmentation between national and regional authorities, the slow or absent recognition of foreign qualifications leading to migrant workers being overqualified for the jobs they can access, and limitations in the existing Catalogue of Hard-to-Fill Occupations. Looking ahead, many stakeholders saw increased labor migration from Latin America as a viable long-term solution and expressed support for exploring new mechanisms like GSPs to create more predictable and aligned migration pathways.

This study also provides several strategic recommendations aimed at improving Spain's labor migration system to better respond to existing and emerging labor shortages, which are in line with the recommendations of a companion "Institutional Assessment of Migration" report. A key reform area is the enhancement of labor market diagnostics, including the modernization of the Catalogue of Hard-to-Fill Occupations through more agile, transparent, and indicator-based updates. The COL methodology developed in this report offers a replicable framework that could be institutionalized on a recurring basis to inform or complement the existing catalogue. This tool could inform workforce and migration planning as well as targeted regularization pathways for migrants already residing in Spain. In addition, administrative processes for residence and work permits should be simplified and expedited through digitalization and expanded capacity in consulates and migration offices. The development of more proactive legal migration pathways and partnerships, including GSPs, would allow Spain to anticipate labor needs rather than rely on reactive measures. Further recommendations include investing in the recognition of foreign qualifications, expanding micro-credentialing, and strengthening coordination across national, regional, and local actors. Finally, aligning education and vocational training systems more closely with labor market demand is essential to addressing skill mismatches for both domestic and migrant workers.

The consultations also identified that migrant associations play a strategic but underutilized role in facilitating integration. These entities provide a wide range of services – such as legal support, training, and community outreach – and often act as a bridge between migrants and public institutions. While resource-constrained, they are uniquely positioned to support vocational upskilling, skill certification, and local labor insertion, particularly in sectors like elder care and logistics. Their insights also point to persistent barriers in Spain's migration system, including rigid credential recognition and limited institutional engagement.

Recognizing these organizations as partners in labor migration policy could enhance both program effectiveness and migrant outcomes.

Finally, the study uncovered insights on demographic and employment trends – presented in the Annex – which reinforce the potential role of Latin American migration in addressing Spain's labor shortages, while also pointing to persistent structural barriers. Spain's aging population contrasts with the younger, more economically active profile of many Latin American migrants. However, unemployment remains disproportionately high among migrants – especially women, youth, and older individuals – who often face intersecting challenges even when possessing relevant qualifications. While data limitations prevented a detailed demographic analysis of the workers in critical occupations, an analysis of broader occupation groups shows that some groups, such as technicians and clerical support workers, show a relatively younger age profile, while managers, sales workers, and elementary occupations tend to be staffed by older workers who will retire over the coming decades. At an aggregate level, the fastest growing occupations are in urban-biased, high-skill occupations such as ICT professionals and health technicians, while the fastest declining occupations are in more traditional, lower-skilled occupations such as shop owners, restaurant workers, and agricultural and livestock workers. However, these patterns mask extensive regional variation and demand trends within finer occupation groups. Finally, occupation groups containing critical occupations have higher shares of workers with secondary education, vocational training, or short-cycle tertiary degrees. Vocational degrees are especially prominent among technicians and craft-related critical occupations, underscoring the importance of strengthening short-term and vocational training pathways.

A limitation of the analysis is that the COL is constructed only at the national level; because labor market needs and mismatches vary heavily across Autonomous Communities, an important improvement would be to explore strategies for generating subnational COLs. A subnational COL was not pursued in this report given data limitations and the time required to conduct regional stakeholder consultations. However, the analysis in the Annex shows substantial variation in sector needs, aging trends, and migrant profiles across Autonomous Communities. Migrants are mostly concentrated in Madrid, Catalonia, Valencia, and Murcia, where labor markets are dynamic and have a high ratio of new contracts to unemployment. In contrast, many inland provinces show lower labor market dynamism and a mismatch between labor supply and demand. While migrants potentially have more geographic flexibility within Spain compared to nationals, this is constrained by housing affordability, administrative barriers such as family reunification timelines, and the concentration of support networks in major cities. These patterns highlight the importance of exploring possibilities for subnational COLs to inform region-level programs and policies.

By establishing a modernized, regularly updated COL implemented transparently by a standing expert body, Spain would align with a well-established international practice to ensure that workforce planning remains responsive, credible, and forward-looking. The methodology applied in this study could be further enhanced through a more systematic approach to bottom-up consultations, including structured employer surveys and open calls for evidence or nominations of critical occupations. Countries such as Australia, the United Kingdom, Canada, Ireland, and Malaysia all operate standing expert bodies that combine top-down labor market analysis with bottom-up consultations to identify critical occupations. These international examples, together with the findings of this study, demonstrate that transparent criteria and open consultation processes are both feasible and effective to maintain a COL to inform education, training, and migration planning.

Introduction

This report presents an in-depth analysis of labor market imbalances in Spain, with the aim of providing a blueprint for labor market analysis to inform education, skills, and migration policies as well as the design of structured migration pathways between Spain and Latin America. The study is grounded in the recognition that labor shortages persist across multiple sectors in Spain, while many Latin American countries face challenges in offering adequate employment opportunities for their workforce. However, available human capital in origin countries does not always necessarily align with the skills required in Spain's labor market, which requires coordination on skills training, in addition to migration policies, between origin and destination countries. This report supports the identification of opportunities for mutually beneficial labor mobility with particular attention to the feasibility of Global Skills Partnerships (GSPs), in which origin and destination countries coordinate on training in the origin country as a mechanism to address skills gaps in both countries.

Spain's shifting demographic profile, including an aging population and a declining youth workforce, is contributing to sustained demand for labor across several occupations.[2] This is further exacerbated by an apparent mismatch between employer demands and the skills and interests of the local workforce. At the same time, recent reforms to Spain's migration framework have opened new opportunities for regular labor mobility, particularly through revised *arraigo* pathways, seasonal hiring mechanisms such as the GECCO *(Gestión Colectiva de Contrataciones en Origen)* system, and targeted strategies for attracting highly qualified professionals, such as the Startup Law and the Digital Nomad Visa. These institutional openings, alongside Spain's longstanding linguistic, cultural, and historical ties to Latin America, position Spain as a strategic partner for Latin American countries to advance coordinated skills training and regularized labor migration to meet evolving skill needs.

The analytical foundation of this report is the Critical Occupations List (COL) methodology, a widely used approach adopted by several countries to guide skills training and migration policy. COL methodologies are regularly used to inform migration policy in countries such as Australia[3], the United Kingdom[4], and Malaysia[5], and have been applied in countries such as Indonesia[6]. A critical occupation is defined as one for which employers face sustained difficulty in attracting or retaining adequately skilled workers under prevailing market conditions. The methodology to identify these integrates a two-pronged analysis: a top-down statistical assessment to identify occupations under pressure based on labor market indicators, and a bottom-up analysis involving Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) with employers and institutional stakeholders. These complementary sources of evidence are then consolidated to identify critical occupations that are hard to fill in the Spanish labor market. The report also considers broader dimensions such as the role of migration policy, credential recognition, regional labor market disparities, and the demographic profile of workers in critical occupations.

Beyond informing structured migration pathways, the COL offers a versatile policy instrument to support broader workforce planning and labor market interventions. In the context of migration policy, the COL provides an empirically grounded basis for identifying priority occupations in which demand exceeds local supply, enabling the calibration of migration channels, bilateral labor agreements, and GSPs to real labor market needs. By clarifying where foreign labor could contribute most effectively, the COL can enhance the

[2] Banco de España. (2023). Retos estructurales de la economía española (Capítulo 2). In Informe Anual 2023 (pp. 106–151). Banco de España.
[3] Australian Government. (2024). 2024 Occupation Shortage List Methodology. Jobs and Skills Australia.
[4] Migration Advisory Committee. (2008). Identifying skilled occupations where migration can sensibly help to fill labor shortages. Home Office.
[5] World Bank. (2019). Monitoring occupational shortages – lessons from Malaysia's critical occupations list. World Bank.
[6] World Bank. (2020). Indonesia's Critical Occupations List 2018 technical report. Coordinating Ministry for Economic Affairs.

transparency and efficiency of regular migration pathways. Additionally, the results have the potential to inform national education and training policies by flagging persistent skills gaps and priority sectors for curriculum development or vocational training investment. When regularly updated, it can also serve as an early warning system for emerging imbalances, guiding both short-term responses and long-term strategic planning in workforce development.

This report presents the results of a comprehensive assessment of labor shortages in Spain and the potential for international labor mobility to address them. It is structured across four core areas: (i) the results of the top-down quantitative analysis, (ii) sectoral and institutional insights from the bottom-up consultations, (iii) a consolidated list of critical occupations validated through both streams of evidence, and (iv) a set of forward-looking policy recommendations. These policy recommendations are also complemented by additional research on themes such as gender and age-specific barriers, regional labor market heterogeneity, and anticipated future workforce needs, which are presented in the Annex of this report. Together, these components provide an integrated evidence base to support the development of migration pathways that are responsive to Spain's evolving labor market while promoting safe, regular, and mutually beneficial mobility between Spain and Latin America.

CHAPTER 1: MIGRATION AND LABOR MARKETS IN SPAIN

1.1 Labor Market Dynamics in Latin America and the Caribbean

Unemployment in Latin America and the Caribbean (LAC) is notably high, with rates comparable to or exceeding those in OECD economies. This section focuses on 3 Latin American countries – Colombia, Ecuador, and the Dominican Republic – which have large and growing diasporas in Spain. In 2023, the unemployment rate in Colombia amounted to 9.6%, in the Dominican Republic to 5.6%, and in Ecuador to 3.5%, compared to an OECD average of 4.8%.[7] The challenge of unemployment is even more prominent for younger generations, with youth unemployment rates in 2023 amounting to 19.4% in Colombia, 11.6% in the Dominican Republic, and 7.8% in Ecuador.[8] Low-income countries and lower-middle-income countries are seeing a rapid expansion of young populations in need of education and jobs. While fertility rates in these countries are declining, they remain above replacement levels. Demographic trends in these economies create an opportunity for "demographic arbitrage", consisting of migration from countries with younger populations and fewer economic opportunities to higher-income countries with aging populations and shrinking labor forces.[9]

In addition to high unemployment rates, the LAC region has high rates of job informality, especially for young workers. In 2012, around half of young wage-earners in the region worked in the informal sector, compared to about a third of adult wage-earners, and these rates remained similar in the period between 2017 and 2019.[10] During the COVID-19 crisis, in contrast to previous economic downturns, both formal and informal employment contracted significantly, but the partial recovery of employment since 2021 has mainly been led by informal occupations, highlighting labor market fragility and the need for efficient formalization-focused policies during economic recovery efforts.[11] In 2023, the proportion of informal

[7] World Bank Data (2023). Unemployment, total (% of total labor force) (modeled ILO estimate) – Colombia, Dominican Republic, Ecuador, OECD members. Retrieved from: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=CO-DO-EC-OE

[8] World Bank Data (2023). Unemployment, youth total (% of total labor forces 15-24) (modeled ILO estimate) – Colombia, Dominican Republic, Ecuador. Retrieved from: https://data.worldbank.org/indicator/SL.UEM.1524.ZS?locations=CO-DO-EC-OE

[9] Acosta, P., Özden, Ç., Lebow, J., Rodriguez, L., & Dahlgren, E. (2025). Global Skill Partnerships for Migration - Preparing Tomorrow's Workers for Home and Abroad. The World Bank Group

[10] González-Velosa, C., Ripani, L., & Rosas-Shady, D. (2012). How can job opportunities for young people in Latin America be improved?

[11] Maurizio, R. (2021). Employment and informality in Latin America and the Caribbean: an insufficient and unequal recovery. Geneva: International Labour Organization.

employment in total employment in Colombia was 56.5%, in the Dominican Republic it was 55.7%, and in Ecuador it was 68.1%.[12] Informal occupations often come with lower average incomes, more precarious job conditions, greater instability, and a lack of social protection and employment benefits, which contributes to an overall increase in workers' vulnerability during crises and higher poverty rates.[13]

Across much of Latin America, a common pattern persists in which employment remains concentrated in low-productivity sectors and firms. Across Colombia, Ecuador, and the Dominican Republic, high urban unemployment coexists with a concentration of workers in low-productivity, informal, or self-employed activities – especially in services – reflecting limited structural transformation. Colombia's economy has become heavily service-oriented, absorbing rural migrants through informal self-employment rather than quality wage jobs.[14] Ecuador faces persistent misallocation of labor toward micro and aging firms that stifle productivity and wage growth.[15] Similarly, in the Dominican Republic, rapid economic expansion has not translated into better job quality, as employment remains concentrated in low-productivity sectors with stagnant real wages and weak formalization.[16] These common challenges – urban labor informality, weak links between growth and job quality, and entrenched concentration of employment in low-productivity firms – underscore the structural barriers preventing inclusive and sustainable labor market progress across the three economies.

Policy efforts to reduce unemployment and informality over the past decade have been constrained by a range of challenges including weak employer engagement, design limitations, and lack of scalability. Most countries in the region have relied heavily on short-term job training and labor intermediation programs targeting vulnerable youth, often with modest budgets and limited duration.[17] While these programs aim to improve employability and facilitate labor market entry, several structural and design flaws have undermined their impact. Training content is frequently misaligned with employer needs, owing to weak engagement of the private sector in course design and limited monitoring of training quality. Labor intermediation components are often underdeveloped, with many participants continuing to rely on informal networks to find work. Evaluations of these programs are scarce or methodologically weak, making it difficult to extract clear lessons for scaling or adaptation. Regarding youth unemployment, programs often misdiagnose its nature, focusing narrowly on first-job placement rather than improving the quality and efficiency of job transitions.[18] These limitations, combined with political and institutional discontinuities, have contributed to the low effectiveness of past efforts to reduce informality among young workers.

1.2 Labor Market Dynamics in Spain

Spain, like many other high-income countries, is currently facing significant labor market challenges that

[12] ILOSTAT Data Explorer (2023). SDG indicator 8.2.1 – Proportion of informal employment in total employment by sex and sector (%) – Annual. Retrieved from: https://rshiny.ilo.org/dataexplorer07/?lang=en&segment=indicator&id=SDG_0831_SEX_ECO_RT_A

[13] Maurizio, R. (2021). Employment and informality in Latin America and the Caribbean: an insufficient and unequal recovery. Geneva: International Labour Organization.

[14] Carranza, E., Wiseman, W., Eberhard-Ruiz, A., & Cárdenas, A. L. (2021) Jobs Diagnostic Colombia. World Bank, Washington, DC. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO.

[15] Peña, F. P., & Ferro, E. (2024). The Role of Firm Dynamics in Aggregate Productivity, Job Flows, and Wage Inequality in Ecuador. World Bank, Policy Research Working Paper.

[16] Winkler, H. and M. Montenegro. (2021). Dominican Republic Jobs Diagnostic. World Bank, Washington, DC. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO.

[17] González-Velosa, C., Ripani, L., & Rosas-Shady, D. (2012). How can job opportunities for young people in Latin America be improved?

[18] Cunningham, W. (2010). Unpacking youth unemployment in Latin America (Policy Research Working Paper No. 5022). World Bank. http://documents.worldbank.org/curated/en/591521468147840898

reflect its unique demographic and socioeconomic context. Despite a notable reduction in its unemployment rate in the past decade, Spain still has one of the highest unemployment rates in the euro area, while still experiencing labor shortages in critical economic sectors.[19] The country's unemployment rate has decreased significantly, from 25.9% in the first trimester of 2014 to 12.3% in the first trimester of 2024.[20] However, labor shortages persist due to mismatches between workers' skills and interests and employers' needs; sectors with a high capacity to generate employment, like construction, are not receiving sufficient search intensity, while other sectors with lower matching efficiencies are attracting a disproportionate amount of job search activity.[21]

The overall reduction in Spain's unemployment rate, driven by a combination of strong economic growth, labor market reforms and favorable external factors, has been broad-based, with improvements observed across nearly all demographic groups.[22] According to the national labor force survey, the decline was slightly more pronounced for men (−54.8%) than for women (−45.5%), and women's unemployment rate remains higher (13.9%) compared to men's (10.7%). The decline in unemployment rates has also been most significant among workers between 35 and 49 years old, who saw their unemployment rate fall by over half. However, youth unemployment (16-24 years old) remains elevated at 28.7%, and the highest among age groups, despite a 46.1% reduction since 2014, indicating persistent barriers to labor market entry for younger cohorts. Workers with lower educational attainment continue to face the highest unemployment rates, although all education levels saw large declines between 2014 and 2024. Regionally, while all areas experienced substantial improvements, the strongest percentage drop was recorded in sparsely populated areas (−55.4%), suggesting a possible recovery in rural labor markets.

However, disaggregation by income level reveals more uneven dynamics. In 2023, unemployment remained highest among individuals in the bottom income decile (24.8%), and only modest improvements were observed for the lowest three deciles. In contrast, individuals in higher income brackets, particularly those in the ninth decile, saw more substantial declines, indicating a widening gap in labor market inclusion. Unemployment increased in some middle and upper-middle-income groups (e.g., fifth and seventh deciles), suggesting that certain segments of the population may still be vulnerable to structural or cyclical pressures. These patterns underscore that, despite aggregate gains, labor market recovery has not been equally distributed across social strata, and vulnerable groups remain at higher risk of exclusion.

Demographic challenges, including an aging population and declining labor force participation, further accentuate Spain's labor shortages. The Bank of Spain's 2023 Annual Report discussed these challenges, reporting that the proportion of the population over 64 has more than doubled since the early 1970s, exceeding 20% in 2023.[23] This trend is expected to intensify, resulting in a more pronounced increase in the dependency ratio (the ratio of those over 66 to those aged 16-66) in Spain compared to the EU average. Projections in the report indicate Spain's dependency ratio will rise by 27.2 percentage points to 53.8% between 2023 and 2053, while the EU average increases by 16.6 percentage points to 45.8%. Aging causes a considerable increase in public spending on pensions, healthcare, and long-term care, putting additional pressure on public finances. The report also acknowledges that net foreign arrivals are practically the sole source of recent population growth in Spain, with immigrants generally being younger than nationals and having higher labor market participation rates than natives, ultimately contributing to a less pronounced dependency ratio.

[19] EUROSTAT (2024). "Euro Area Unemployment at 6.3%". Available at: https://ec.europa.eu/eurostat/product?code=3-31102024-BP
[20] INE (2024), Encuesta de Población Activa (EPA). Serie histórica. Available at: https://www.ine.es/prensa/epa_tabla.htm
[21] Carrillo-Tudela, C., La Fuente, C., Visschers, L., & Zentler-Munro, D. (2024). Spanish Labour Market, Mobility and Labour Shortages.
[22] INE (2024). Indicadores de Calidad de Vida. Dimensión 2: Trabajo. 2.1: Cantidad.
[23] Banco de España. (2023). Retos estructurales de la economía española (Capítulo 2). In Informe Anual 2023 (pp. 106–151). Banco de España.

1.3 Reforms Facilitating Migrant Integration and Labor Market Access in Spain

In response to its current demographic and economic challenges, Spain has introduced reforms to streamline immigration processes and integrate skilled migrants into the labor market. Recent measures, such as Decree 629/2022, aim to simplify bureaucratic procedures and promote the inclusion of migrants in high-demand sectors like elderly care and healthcare.[24] For example, it strengthened the role of the *arraigo* mechanism used to regularize undocumented migrants, created a new *arraigo para la formación* enabling undocumented migrants to obtain a temporary residence permit by enrolling in vocational or professional training programs, and introduced more flexible conditions supporting foreign students to transition into the workforce. Furthermore, the decree brought major changes to Spain's seasonal labor migration framework. The GECCO system enables the hiring of seasonal workers abroad under a four-year visa scheme, allowing for up to nine months of work annually. Crucially, after completing four consecutive years of seasonal work within these time limits, workers become eligible to apply for a two-year residence and work permit. This aims to facilitate access to a more stable labor force for sectors such as agriculture and hospitality which are heavily reliant on seasonal employment. The *arraigo* mechanism and GECCO system were further strengthened by a new immigration decree in December 2024, including through a new *arraigo sociolaboral* which grants residence and work permits for undocumented migrants with a valid work contract.[25]

In parallel, a growing number of labor mobility programs and pilot initiatives on complementary migration pathways signal a stronger commitment to expanding legal, orderly, and predictable channels for migration. These efforts respond to converging pressures, including population aging, persistent skill shortages in key sectors, and the imperative to reduce dependence on irregular migration routes. By developing and testing new legal pathways – such as sector-specific labor mobility schemes, employment-linked humanitarian admissions, and talent-matching platforms – the Spanish government and its partners aim to provide safer and more structured options for migrants. These approaches help meet labor market needs in destination countries while offering migrants dignified opportunities for protection and improved livelihoods. At the same time, they support a shift from reactive, crisis-driven migration management toward a more strategic and long-term framework, strengthening international cooperation, private sector involvement, and the integration of migration into wider labor market and development policies.

As a companion to this report, the "Institutional Assessment for Migration" report provides an in-depth examination of Spain's migration governance, regulatory framework, and institutional capacity. Readers may refer to this report for more details on Spain's regulatory framework, structured legal pathways, recent reforms and initiatives, and ongoing challenges in migration management. The findings and key recommendations from that institutional assessment report align closely with the findings of the stakeholder consultations implemented for this report.

[24] Ministerio de la Presidencia, Relaciones con las Cortes y Memoria Democrática (2022). " Real Decreto 629/2022, de 26 de julio, por el que se modifica el Reglamento de la Ley Orgánica 4/2000, sobre derechos y libertades de los extranjeros en España y su integración social, tras su reforma por Ley Orgánica 2/2009, aprobado por el Real Decreto 557/2011, de 20 de abril." Available at: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-12504

[25] Government of Spain. (2024). Real Decreto 1155/2024, de 19 de noviembre, por el que se aprueba el Reglamento de la Ley Orgánica 4/2000, de 11 de enero, sobre derechos y libertades de los extranjeros en España y su integración social. Boletín Oficial del Estado, 280, 20 November 2024.

1.4 Migration between Latin American and Spain

Immigration to Spain increased notably after its accession to the European Community, driven by a growing demand for jobs in the construction, agriculture, and tourism sectors.[26] Between 1994 and 2004, the Spanish economy created 6 million new jobs, with 2 million being filled by foreign workers. This rapid labor market expansion transformed Spain into one of the primary destinations for migrants within the OECD, ranking as the second-largest recipient of immigrants between 2002 and 2014. Migrants arrived predominantly from Europe, Latin America, and Africa (particularly Morocco). Then, the European financial crisis significantly impacted Spain, leading to soaring unemployment rates and triggering a reversal in migration flows, with emigration surpassing immigration for some years. However, since 2016, this trend has shifted once again, and Spain's net migration balance has turned positive, reflecting renewed inflows of foreign nationals amid demographic pressures and economic recovery.

Spain has emerged as a key destination for Latin American migrants in Europe, reflecting Spain's historical, linguistic, and cultural ties with the region. Over recent decades, migration patterns have shifted, with Latin American nationals now constituting a significant portion of Spain's foreign-born population – migrants from Latin America currently exceed 30 percent of the total foreign-born population in Spain.[27] Among these, Colombians, Ecuadorians, and Dominicans have become increasingly prominent migrant groups, with Colombia showing a remarkably rapid growth in migration to Spain in recent years; in the last quarter of 2024, Colombians represented the largest group of new arrivals to Spain, with over 40,000 individuals entering the country during that three-month period alone.[28] According to the most recent official data available, Colombians are currently the third-largest immigrant group in the country, comprising 8,9% of total immigrants in Spain, Ecuadorians are the thirteenth largest, comprising 1,9% of immigrants, and Dominicans are the twenty-sixth largest, comprising 1% of all immigrants.[29]

The migration relationship between Spain and Latin America is deeply rooted in a long and complex history of exchange, marked by alternating flows. Since 1492, migratory ties have developed alongside political, economic, and cultural dynamics, shaping a distinctive transatlantic connection. A crucial foundation of these ties was the large-scale Spanish emigration to Latin America during the 19th and 20th centuries, particularly to countries such as Argentina, Chile, Venezuela, and Cuba. These earlier movements established transnational family networks and diasporas and laid the groundwork for reverse migration flows, with increased migration from Latin America to Spain in the late 20th and early 21st centuries. As Spain transitioned from a country of emigration to one of immigration, Latin American migrants stood out for their relative ease of integration, facilitated by shared linguistic, cultural, and historical ties.[30]

Key political decisions and legal frameworks in Spain have also played a crucial role in creating a legal and administrative environment to facilitate migration from the LAC region. Since the late 20th century, Spain has signed bilateral agreements with Latin American countries to regulate labor migration flows and prioritize nationals from these countries in hiring processes. These agreements – along with broader regularization campaigns, such as the 2005 process that granted legal status to a large number of previously

[26] ICMPD (International Centre for Migration Policy Development). (2024). Re-thinking approaches to labour migration Potential and Gaps in EU Member States' Migration Infrastructures Case Study Summary – Spain. Migration Partnership Facility.
[27] INE (2023). "Población residente por fecha, sexo, edad, nacionalidad (agrupación de países) y lugar de nacimiento (agrupación de países)". Resultados definitivos. Available at: https://www.ine.es/jaxiT3/Datos.htm?t=56938
[28] INE (2025). "Estadística Continua de Población (ECP)". 1 de enero de 2025. Datos provisionales. Available at: https://www.ine.es/dyngs/Prensa/ECP4T24.htm
[29] INE (2024). "Censo Anual de Población". Primeros Resultados, 1 de enero de 2024. Available at: https://ine.es/uc/bgGTAxD9
[30] García Ballesteros, A., Jiménez Basco, B., & Redondo González, Á. (2009). La inmigración latinoamericana en España en el siglo XXI. Investigaciones Geográficas, Boletín del Instituto de Geografía, UNAM, 70, 55-70.

undocumented migrants – contributed to a sharp increase in the number of Latin American residents holding valid work and residence permits.[31] In parallel, Spain has adopted a legal framework offering comparatively favorable conditions for Latin American nationals to acquire residence and nationality. This included reducing the residency requirement for naturalization to two years (versus five or ten for most other nationalities) and specific provisions for descendants of Spanish citizens.[32] Furthermore, Spain has signed dual nationality conventions with most Latin American countries since 1958, reinforcing the legal and political infrastructure underpinning transatlantic mobility.[33] Additional instruments, such as the Ibero-American Multilateral Social Security Convention, ratified by Spain and several Latin American countries, have further supported mobility by enabling the transfer and coordination of pension entitlements across borders.[34] Finally, for most Latin American nationals, the removal of the Schengen visa requirement for short stays has further facilitated mobility, although it may also create incentives for overstays and irregular migration in some cases.[35]

1.5 Persisting Challenges and Future Pathways

While a growing pool of migration pathways and policies between Spain and other countries, particularly in the LAC region, have been developed, these do not fully address the persistent mismatches in Spain's labor market. Many migrants enter Spain through mechanisms such as *arraigo*, asylum, or student pathways, which, although very important for social inclusion, do not always align with the skill needs of the Spanish economy. Moreover, these channels are often reactive, irregular, or difficult to scale in a coordinated manner. Estimates suggest that, at the end of 2023, approximately 700,000 migrants were living in Spain in an irregular administrative situation, representing around 17% of the non-EU foreign population.[36] As of December 2024, over 313,000 individuals held a valid residence permit in Spain granted on the basis of *arraigo* – a figure that has grown by 31% compared to December 2023 and by 110% when compared to December 2022, for instance. Structural transformations in the global economy are intensifying the demand for workers in specific sectors and occupations, especially in high- and upper-middle-income countries. Technological change, automation, climate adaptation strategies, and demographic aging are generating critical shortages, not only in low-skilled roles but increasingly in middle-skilled occupations that require vocational or tertiary training, particularly in healthcare, elderly care, construction, and hospitality.[37]

At the same time, much of the projected growth in the global working-age population is concentrated in low- and lower-middle-income countries. In these countries, education systems often face structural limitations in coverage, quality, and alignment with international labor market demands, and enrollment rates in secondary and especially tertiary education remain comparatively low. This has the strong potential

[31] Ibid

[32] Gobierno de España. (2024). Adquisición de la Nacionalidad. Available at: https://administracion.gob.es/pag_Home/Tu-espacio-europeo/derechos-obligaciones/ciudadanos/residencia/obtencion-nacionalidad.html

[33] Ministerio de Inclusión, Seguridad Social y Migraciones. (n.d.). Convenios de Doble Nacionalidad. Available at: https://www.inclusion.gob.es/eu/web/migraciones/convenios-de-doble-nacionalidad

[34] Ministerio de Inclusión, Seguridad Social y Migraciones. (n.d.). Convenio Multilateral Iberoamericano de Seguridad Social. Available at: https://www.seg-social.es/wps/portal/wss/internet/InformacionUtil/32078/2070

[35] Ministerio de Asuntos Exteriores, Union Europea y Cooperación. (n.d.). Lista de terceros países cuyos nacionales están sometidos a la obligación de visado para cruzar las fronteras exteriores y de aquellos cuyos nacionales están exentos de dicha obligación. Available at: https://www.exteriores.gob.es/Consulados/SAOPAULO/es/ServiciosConsulares/Documents/listapaisesvisado.pdf

[36] Funcas. (2024). Notas de Conyuctura Social. Dirección de Estudios Sociales. Available at: https://www.funcas.es/wp-content/uploads/2024/05/2405-NCS.pdf

[37] Acosta, P., Özden, Ç., Lebow, J., Rodriguez, L., & Dahlgren, E. (2025). Global Skill Partnerships for Migration - Preparing Tomorrow's Workers for Home and Abroad. The World Bank Group

to result in a migrant workforce that may be inadequately prepared for the skill requirements of destination countries. This global disconnect between labor supply and demand has created a structural skills mismatch, limiting the potential of migration as a mutually beneficial tool for development and labor market stabilization. These dynamics are further intensified by the increasing global competition for skilled workers, particularly in aging high- and upper-middle-income countries such as Spain. In this context, the absence of coordinated, formal pathways for skills-based migration increases the likelihood that labor shortages will be met through informal or irregular migration channels, reducing the development impact of migration for both countries of origin and of destination.

In this scenario, ensuring that migrant workers have the right skills – and the legal pathways to deploy them – will be critical to realizing the full benefits of international labor mobility. This requires closer alignment between skills identification, training systems, and migration policy, supported by timely labor market information and active engagement with employers. Well-designed mobility pathways can help destination countries address persistent labor shortages while offering migrants safer, more predictable opportunities for employment and skills development. At the same time, cooperation with countries of origin can support skills recognition, reduce brain waste, and strengthen the developmental impacts of migration through remittances, knowledge transfer, and return pathways. Together, these elements can shift labor mobility from a reactive tool to a strategic instrument for growth.

GSPs offer a structured and forward-looking solution that links human capital development in countries of origin with the labor market needs of destination countries.[38] GSPs are bilateral or multilateral agreements that integrate skills training with legal migration pathways in a way that is financially sustainable and mutually beneficial for both origin and destination countries. In a GSP, training occurs in the origin country both for those who intend to migrate ("away track") and those who will remain and work locally ("home track"). Training programs designed to address skills that are in short supply in both the origin and destination countries, thus addressing skill needs in the destination while mitigating concerns of brain drain in the origin. Importantly, financing and design is a joint responsibility of origin and destination countries – including both governments and private employers – thus encouraging joint investment in skills facing mutual demand while attracted needed resources to less-wealthy origin countries. Coordinated provision of legal pathways establish legal, predictable, and timely migration of workers meeting firm needs. However, while GSPs and similar skilled migration partnerships have potential to align migration with mutual development goals, they depend critically on accurate and timely information of employer needs.

[38] Ibid

CHAPTER 2: CRITICAL OCCUPATIONS ANALYSIS METHODOLOGY

The study employs a robust methodology based on the COL framework. It combines quantitative and qualitative methods in two main phases: a "top-down" and a "bottom-up" Analysis.The **top-down** phase involves constructing indicators from existing labor supply and demand data to classify occupations as critical based on their wage trends, vacancy data, new contracts, unemployment, required experience levels, and job market absorption ratio. The **bottom-up** phase validates these findings through consultations with employers, providing context to the identified shortages and revealing skill gaps, recruitment challenges, and training needs. Variations of this approach are regularly applied to guide skills training and migration policy in countries such as Australia[39], the United Kingdom[40], Canada[41], Ireland[42], and Malaysia[43].

By identifying which occupations face persistent shortages, as well as the specific technical and soft skills that employers deem most lacking, the COL enables the precise targeting of training investments both domestically and in origin countries for migration. This ensures that prospective migrants are equipped with the competencies most valued in the Spanish labor market, thereby having the potential to increase their employability and facilitate smoother integration upon arrival. The COL provides a granular, evidence-based understanding of occupational demand and skill requirements in the destination country, serving as a foundational tool for aligning workforce development strategies across borders.

[39] Australian Government. (2024). 2024 Occupation Shortage List Methodology. Jobs and Skills Australia.
[40] Migration Advisory Committee. (2008). Identifying skilled occupations where migration can sensibly help to fill labour shortages. Home Office.
[41] Immigration, Refugees and Citizenship Canada. (2025). 2023–2024 report to Parliament: Category-Based Selection in Express Entry. Government of Canada
[42] Ireland Department of Enterprise, Trade, and Employment (2023). Outcome of the Review of Occupations Lists for Employment Permits
[43] World Bank. (2019). Monitoring occupational shortages – lessons from Malaysia's critical occupations list. World Bank.

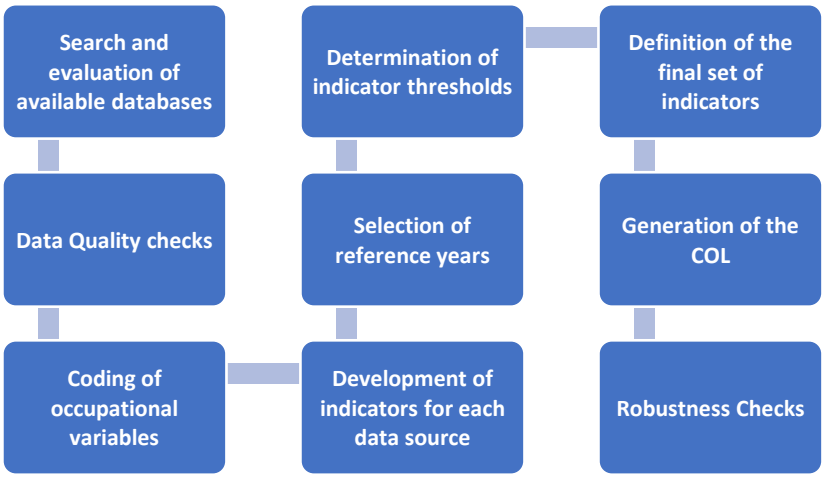
2.1 Top-Down Analysis

2.1.1 Summary Objective and Contribution

The first step of the COL methodology is the **top-down** analysis, which is applied to identify a list of critical occupations in the Spanish labor market based on quantitative labor market data. The process consists of the following steps, also summarized in Figure 1:

1. **Search and evaluation of available databases** – Identifying and assessing relevant data sources.
2. **Data quality checks** – Access the quality of the data.
3. **Coding of occupational variables** – Standardizing occupational classifications.
4. **Development of indicators for each data source** – Creating metrics to analyze labor market trends.
5. **Selection of reference years** – Defining the period for analysis.
6. **Determination of indicator thresholds** – Establishing cut-off points for each metric.
7. **Definition of the final set of indicators** – Selecting the most relevant indicators.
8. **Generation of the COL** – Applying the methodology to identify critical occupations.
9. **Robustness checks** – Validating the results through sensitivity analyses.

Figure 1: Top-down methodology



2.1.2 Search and Evaluation of Available Databases

The first step of the top-down methodology involves identifying and assessing the available databases in Spain for labor market analysis. The most commonly used data sources include the *Encuesta de Población Activa (EPA)*, *Encuesta de Condiciones de Vida (ECV)*, and *Encuesta de Estructura Salarial (EES)*. While these databases provide relevant labor market information, they do not offer the required level of granularity for this study, which aims to analyze occupations at a four-digit level of the International Standard Classification of Occupations 2008 (ISCO-08).[44] The survey-based data sources available in Spain do not provide

[44] The International Standard Classification of Occupations 2008 (ISCO-08) is a four-level hierarchically structured classification that covers all jobs in the world. ISCO-08 classifies jobs into 436 groups (4-digit occupation codes). These unit groups are aggregated into 130 minor groups (3-digit occupation codes), 43 sub-major groups (2-digit occupation codes), and 10 major groups (1-digit occupation codes) based on their similarity in terms of the skill level and skill specialization required for the jobs.

information at the four-digit level of the ISCO-08, given that these are constrained by sample size limitations, which affect the reliability of estimates at highly disaggregated occupational levels. Thus, these sources were not directly used to select occupations, but they played a crucial role in validating the results.

To address the lack of occupational granularity in survey-based sources, the study focused on databases that track the entire labor market, allowing for a higher level of detail. One of the primary sources used was the monthly data published by Spain's Public Employment Service *(SEPE)*, which provides information on new job contracts and registered unemployment by four-digit occupation codes, as well as the nationality of the worker (Spanish or foreign). The large volume of observations captured in SEPE is one of its main advantages, particularly for contract data. However, while unemployment figures from SEPE offer standardized reporting of job seekers, they must be interpreted with caution. Not all unemployed individuals register with SEPE – especially in sectors with high informality – and classification errors may occur when individuals register under broader or more generic occupational categories. As such, while this metric is useful for identifying potential labor oversupply, it may underrepresent unemployment in certain occupations. Additionally, SEPE data does not cover the informal labor market and does not provide any figures on total employment in the active labor force.

These data are published semiannually in the *Boletín de Ocupaciones Estatal*, but the official SEPE website does not provide a detailed historical breakdown. To overcome this limitation, a web scraping process was conducted, compiling monthly data from January 2020 to December 2024. This process is described in more detail in Box 1 below.

Box 1: Web scraping of SEPE data

To reconstruct a monthly historical series of job contracts and unemployment figures by occupation, a web scraping routine was developed using R. The data was collected directly from the SEPE website, which publishes detailed occupational statistics monthly. The script automated the extraction of data tables by navigating the website structure and retrieving occupation-level indicators for each available month from January 2020 to December 2024. After collection, the data were cleaned to ensure consistency across months. The data was validated by comparing monthly aggregates with official summary figures published by SEPE, confirming the internal consistency and reliability of the scraped dataset. This process enabled the creation of a comprehensive, high-frequency database suitable for tracking labor market trends at a four-digit occupational level.

Another important source used in the analysis was the Lightcast database, which compiles and processes data from a wide range of online job posting websites. This dataset includes metadata extracted from raw job ads – such as occupation titles, required skills, job location, posting duration, and sometimes salary or education requirements – mapped into standard international classification systems (e.g., ISCO occupational classifications at the 4-digit level and NACE classification for economic sectors). It allows for a granular analysis of labor demand trends, including employer preferences and vacancy dynamics. However, its different limitations must be acknowledged. First, salary and education data are not consistently reported across postings. Second, job posting data tends to overrepresent formal, high-skilled, and urban occupations while underestimating demand for informal or low-skilled roles often filled through informal channels such as referrals or in-person inquiries. Despite these caveats, Lightcast provides a unique and timely view of employer demand and complements more traditional labor market sources. The advantages and limitations of SEPE and Lightcast data sources are discussed in more detail in the following sub-section.

2.1.3 Data Quality and Limitations

SEPE Data

To assess the reliability of SEPE data, a comparison was made with EPA figures, a widely respected labor market data source in Spain. Although EPA was not used in the primary analysis due to its lower occupational granularity, it served as a benchmark to validate the distributional trends observed in the SEPE data. The EPA provides occupational data at the one-digit level using the CNO-11 (Clasificación Nacional de Ocupaciones 2011) – Spain's national occupational classification – and SEPE contract data was aggregated to this level for the validation exercise. Since the EPA does not provide data on new contracts, the subset of workers who started their jobs within the past month was used as a proxy to compare with SEPE data on new contracts. This approach is not perfectly equivalent, as a worker may sign multiple contracts within a year, but it offers a close approximation for assessing trend alignment.

The comparison shows a strong alignment between the occupational distributions captured by SEPE and EPA data over time, as depicted in Figure 2. In both data sources, Group 9 occupations (elementary jobs) consistently account for the largest share, followed by Group 5, which includes roles in personal care, retail, hospitality, and security services. While not all occupations in Group 5 are necessarily entry-level, many of them, such as waiters, cleaners, and sales assistants, tend to be associated with lower experience requirements and high turnover rates. This pattern suggests a concentration of activity in segments of the labor market characterized by lower barriers to entry. Other occupational groups also exhibit comparable shares and stability across years among data sources, reinforcing the internal consistency of the SEPE dataset. These similarities are particularly notable given that EPA includes informal workers while SEPE captures only formal contracts, suggesting that the SEPE dataset, though narrower in scope, reflects broader labor market dynamics reasonably well.[45]

A notable difference is the relatively higher share of Group 9 (elementary occupations) in SEPE compared to EPA. This discrepancy may be explained by the fact that Group 9 jobs are often associated with short-term or frequently renewed contracts. While SEPE registers each individual contract, EPA captures the employment of individuals at a given moment without accounting for contract multiplicity. This structural difference implies that Group 9 may be overrepresented in SEPE, especially when using indicators based on absolute volumes. To mitigate this potential bias, the methodology primarily relies on relative indicators – such as percentage changes and absorption ratios – complemented by a smaller set of level indicators.

SEPE data on unemployment also largely aligns with EPA trends (Figure 3). While SEPE provides monthly counts of unemployed individuals by occupation, EPA does not report unemployment by current occupation, as individuals without a job are not classified under an active occupational code. To address this limitation, the comparison used the last occupation held, available in the EPA, as a proxy. Though fewer than half of unemployed individuals report a previous occupation, the proxy remains useful for identifying broad trends in unemployment by occupation. Thus, SEPE offers a structured and frequent account of registered unemployment in the formal sector, while EPA offers a broader snapshot of the labor force, covering informal work and discouraged jobseekers, but with an imperfect proxy for unemployment by occupation. In both datasets, occupations in Groups 9 (elementary jobs) and 5 (service and sales) consistently account for the largest share of unemployed individuals.

[45] According to EPA 2024 data, 84.1% of employed individuals reported being either public or private sector employees, indicating formal employment. This share was slightly lower in Group 5 occupations, at 81.8%, and much higher in Group 9, at 98%.

Figure 2: Occupational distribution: SEPE vs. EPA (2021–2024)

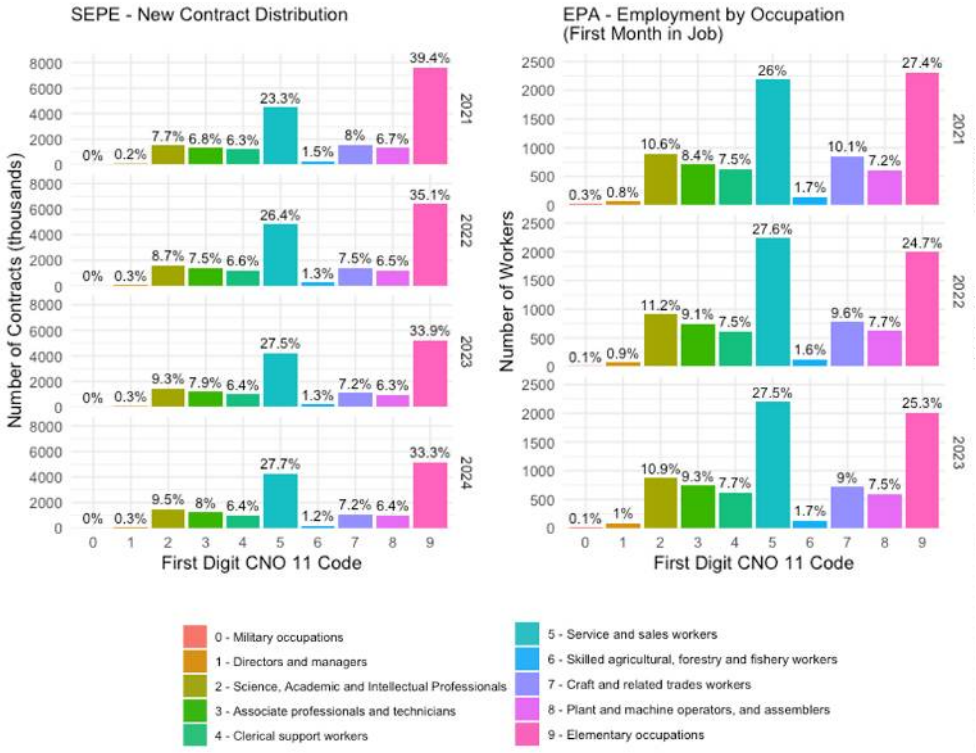
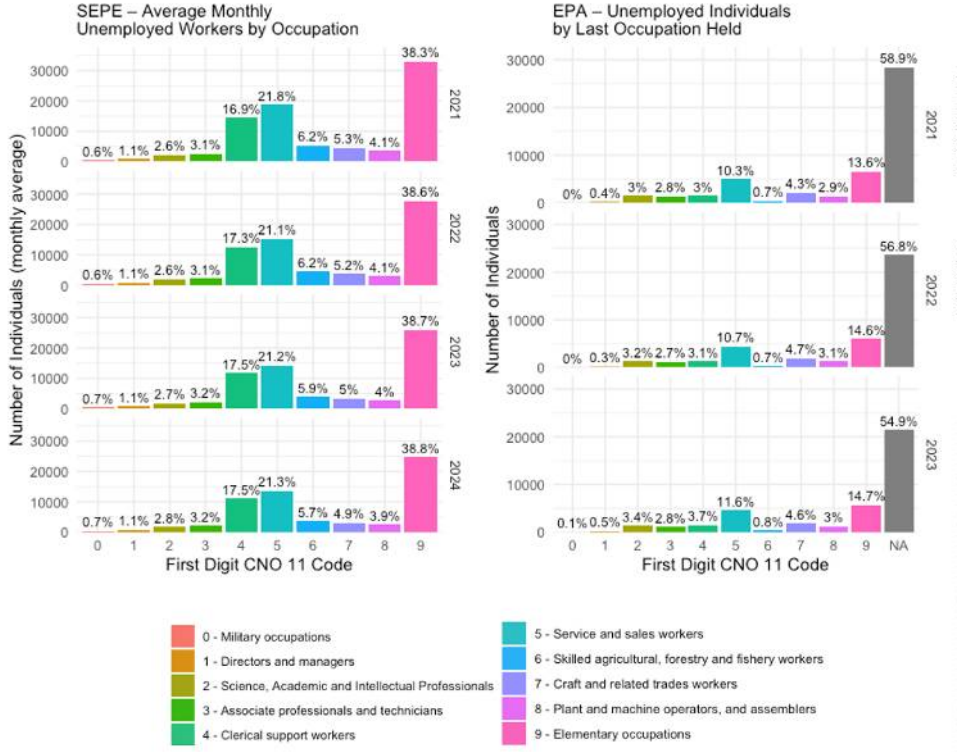


Figure 3: Unemployment by occupation: SEPE vs. EPA (2021–2024)



One notable divergence concerns Group 4 (clerical support workers), which appears significantly overrepresented in SEPE unemployment data compared to EPA. This may be linked to the nature of clerical occupations and job seeking behavior in these occupations. In SEPE, jobseekers are classified based on the occupation they declare when registering for unemployment, while the EPA proxy is based on the last occupation held. This distinction suggests that SEPE captures the intended direction of job search, while EPA reflects recent labor market history. Many individuals with administrative training may aspire to clerical support roles, even if they have limited experience in this occupation and their skills allow them to work across a broader range of occupations. Clerical occupations may also appear more prominent in SEPE data if there is strong competition and limited openings relative to the number of qualified individuals actively seeking these positions.

Overall, the convergence between SEPE and EPA distributions lends credibility to the use of SEPE unemployment data for constructing indicators related to labor market saturation and occupational stress. While SEPE data do not capture informal employment and may be influenced by classification or registration behaviors, their granularity and regularity offer a unique window into the formal job-seeking population. The EPA comparison confirms that these patterns are broadly aligned with labor market realities, even if some occupational groups require more cautious interpretation.

Lightcast Data

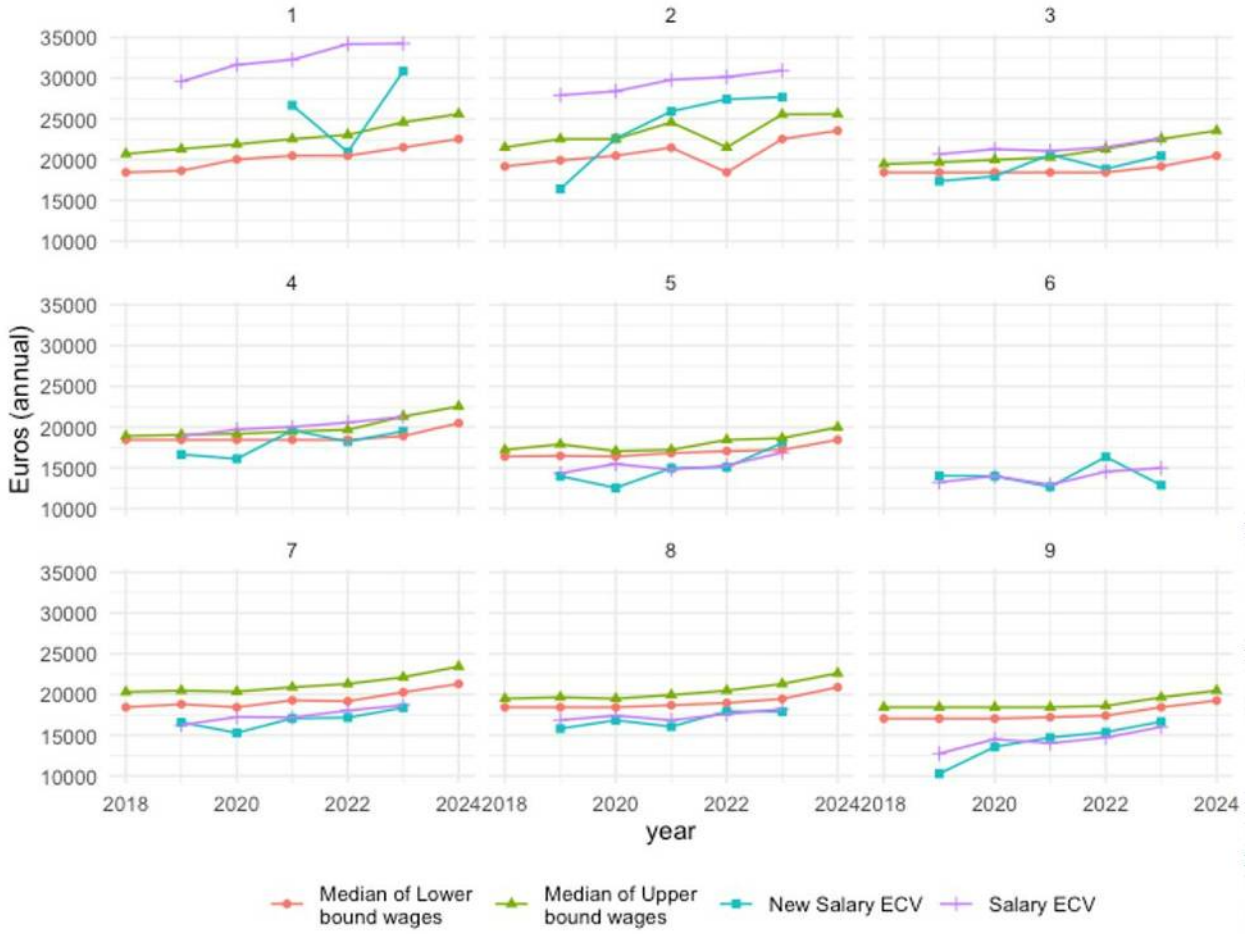
To validate the reliability of salary information from Lightcast, a comparison was made with official statistics from the ECV survey. While ECV reports net wages based on survey data, Lightcast provides gross salary estimates extracted from job postings. This fundamental difference limits direct comparability, but general trends across occupational groups can still be evaluated. Median wages were used for the primary comparison, as they are less sensitive to outliers and more suitable for skewed distributions – the comparison can be found in Figure 4 below. Mean wages were also analyzed in Figure 6 in the Annex.

Despite discrepancies in salary levels, Lightcast salary trends appear to be consistent with official ECV data across most occupational groups. The absence of data for group 6 (skilled agricultural, forestry, and fishery workers) reflects the lower presence of such jobs in online postings. The comparison also included a subset of ECV respondents who reported having been unemployed during the year and subsequently started a new job, as this group more closely reflects the population targeted by online job postings – namely, individuals entering newly advertised positions. Although this group shows greater year-to-year variation in salaries due to smaller sample sizes, it helps confirm that Lightcast values do not diverge greatly from observed salary patterns in the labor force.

Given the nature of advertised salaries, Lightcast data is not expected to reflect negotiated or realized wages. Job offers may differ from final contracts, and postings often represent aspirational or filtered values. Nevertheless, the observed trends – particularly the wage progression over time and the ranking of occupations by salary level – suggest that Lightcast data, while not definitive, provides a realistic proxy for market wage expectations. This makes it suitable for use in this study to measure perceived labor demand and employer preferences.

Experience data from Lightcast were also compared with ECV figures, but the two measures are conceptually different and not directly comparable. While Lightcast captures the minimum years of experience required in job postings, ECV reflects the average experience of employed individuals. Since having more experience than the minimum does not reduce one's chances of being hired and may even improve them, the distributions differ significantly. For this reason, the comparison is presented in Figure 7 in the Annex, but no conclusions were drawn from it in the primary analysis.

Figure 4: Median annual wages by occupation: Lightcast vs. ECV (2018–2024)



"Lower bound" and "upper bound" wages refer to the minimum and maximum values, respectively, of salary intervals reported in Lightcast job postings. The chart shows the median of these values across all postings with salary information for each occupation group and year. "New Salary ECV" indicates ECV respondents who started a new job in the last year.

A key limitation of Lightcast data is its representativeness. Online job postings primarily reflect formal demand from employers using digital recruitment channels, which may exclude smaller firms or sectors less reliant on online advertising. As such, these data offer only a partial view of the labor market – one that emphasizes structured and visible hiring processes. It is also important to note that postings refer to intended vacancies rather than actual employment outcomes. Therefore, comparing Lightcast data directly with stock-based sources such as SEPE contracts or total employment figures may lead to misleading conclusions. These sources reflect realized labor market positions, while job postings capture recruitment intensions via vacancy announcements. Divergences between these sources are expected and reflect the distinct dimensions they are designed to measure.

Quality assessment conclusions

Despite their limitations, the datasets used in this study are broadly consistent with established labor market sources. Comparisons between SEPE and EPA data show similar distributions in both contract flows

and unemployment by occupation, lending credibility to the use of SEPE as a source of granular, formal labor market information. Lightcast data aligns reasonably well with ECV figures regarding wage trends, supporting their use as a proxy for employer demand and job posting dynamics.

Each source, however, presents specific constraints that must be acknowledged. In SEPE, the main limitation is the underrepresentation of occupations dominated by informal work, which may bias the analysis against specific low-skill or precarious job categories. For Lightcast, key blind spots include the absence of data for occupations starting with 6 (i.e., ISCO-08 Group 6: Skilled agricultural, forestry, and fishery workers), the underrepresentation of informal sector jobs, limited representativeness, and the challenges in interpreting experience requirements, especially in jobs where years of experience strongly influence hiring. Nonetheless, the overall coherence with official data sources allows for the confident use of these datasets to identify critical occupations in Spain. Moreover, these limitations were partially mitigated through the bottom-up approach, which gathered qualitative insights from employers and industry stakeholders, including representatives from agriculture and other informality-prone sectors, helping to validate and supplement gaps in the quantitative data.

Rather than seeking alignment across fundamentally different indicators, the analysis treats each dataset as capturing a unique aspect of labor market dynamics. Lightcast is valuable for monitoring short-term shifts in employer hiring behavior and the characteristics of emerging demand. SEPE, by contrast, offers high-frequency information on realized job flows and unemployment. Taken together, they complement each other to provide a broad and nuanced understanding of occupational trends.

2.1.4 Coding of Occupational Variables

Job postings were standardized using the ISCO-08 classification to ensure consistency and international comparability in occupational analysis. The classification of job postings was standardized using ISCO-08, a system developed by the International Labor Organization (ILO) and widely adopted by the European Union. ISCO-08 provides a hierarchical structure for occupations, facilitating cross-country comparisons and ensuring consistency in labor market analyses. It classifies jobs into ten major groups, further divided into sub-major, minor, and unit groups, offering a highly detailed categorization of occupations.

To ensure comparability, SEPE data were converted from CNO-11 to ISCO-08 using the official correspondence table made available by the Spanish National Institute of Statistics (INE). The Lightcast dataset already follows the ISCO-08 classification, so no adjustments were required for this data. The SEPE dataset was originally coded in accordance with the CNO-11, which is the Spanish national adaptation of ISCO-08, and was mapped to ISCO-08 according to an official correspondence table.[46]

When differences between CNO-11 and ISCO-08 prevented the automated correspondence rule from being applied, a manual classification exercise was conducted. While CNO-11 is largely aligned with ISCO-08, some differences exist in occupational groupings. Where a single CNO-11 occupation corresponded to multiple ISCO-08 categories, the observations were evenly distributed among the ISCO-08 categories.[47] This assumption may introduce a margin of uncertainty in cases where labor market indicators may not be uniformly distributed across the matched occupations. Conversely, when multiple CNO-11 categories were officially mapped to a single ISCO-08 occupation, their values were aggregated.[48]

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[46] INE (n.d.). National Classification of Occupations (CNO). Theoretical Correspondence for Statistical Purposes: CNO-11 with ISCO-08. Available: https://www.ine.es/en/daco/daco42/clasificaciones/corr_cno11_ciuo08_en.xls

[47] Around 20% of CNO-11 codes were proportionally distributed across multiple ISCO-08 categories.

[48] For instance, in CNO-11, Mathematicians and Actuaries (2415) and Statisticians (2416) are separate occupations, while ISCO-08 groups both under "Mathematicians, Actuaries, and Statisticians" (2120). Approximately 5% of CNO-11 codes were aggregated into single ISCO-08 occupations.

2.1.5 Development of Indicators for Each Data Source

The development of indicators is central to capturing labor market dynamics and identifying critical occupations. This sub-section presents a detailed description of the indicators used in the COL methodology, clarifying their construction process, rationale, and limitations. Indicators are grouped according to the data source: first, those derived from SEPE's administrative records, which offer insights into employment flows and unemployment patterns; and second, those based on Lightcast job posting data, which provide information on employer demand, qualification requirements, and wage trends. Each indicator is described in terms of calculation method, interpretation, strengths, and possible limitations. A summary table is presented at the end of this section for quick reference.

Administrative SEPE data on new employment contracts and the number of unemployed individuals by occupation were used to construct the following indicators at the 4-digit occupation level:

- **Number of new employment contracts (2024)** reflects short-term labor market activity and serves as a proxy for hiring intensity, especially favoring occupations with large volumes of formal hiring. The indicator captures the gross inflow of job creation, regardless of contract type, duration, or quality (e.g., part-time vs. full-time).
- **Percentage change in new contracts (2024 vs 2023 and 2024 vs 2021)** measures the growth or decline in the number of new contracts between 2024 and two reference years (2023 and 2021), capturing both short- and medium-term changes. These indicators, as well as all other "percentage change" indicators in the analysis, are important because they allow smaller occupations with modest absolute growth to stand out rather than favoring those with inherently high volumes of hiring. This feature is helpful in identifying emerging roles that might be overshadowed by dominant occupations in absolute terms. Nonetheless, these indicators remain sensitive to fluctuations in small occupations which may not reflect structural trends.
- **Number of unemployed workers per occupation (2024)** indicates excess labor supply and occupational saturation. It provides a supply-side complement to the contract data, capturing potential mismatches between worker availability and job openings.
- **Percentage change in the number of unemployed workers (2024 vs 2023 and 2024 vs 2021)** signals shifts in labor supply relative to demand. An increase indicates declining relevance or growing mismatch, while a decrease indicates rising demand or successful absorption.
- **Job market absorption ratio (2024)** is defined as the ratio between new contracts and the number of unemployed individuals. It measures how effectively each occupation converts unemployment into employment, reflecting the capacity of the market to absorb available labor in each occupation. A high ratio indicates strong demand relative to supply, while a low ratio suggests excess labor supply relative to demand. This composite measure helps compare occupations with very different absolute levels of employment or unemployment.
- **Percentage change in the absorption ratio (2024 vs 2023 and 2024 vs 2021)** captures changes in the balance between labor market supply and demand. A rising ratio signals better integration of workers into employment, while a falling one signals growing excess labor supply. These movements may also be influenced by temporary shifts in contract volume or registration practices and thus must be interpreted alongside absolute trends in contracts and unemployment.

Additional indicators on **employment contracts signed by foreign workers** were also calculated. These indicators were excluded from the final indicator list as this analysis is intended to reflect broader structural labor market dynamics rather than those driven by foreign employment. However, a parallel list incorporating these foreign worker indicators was developed to explore their potential relevance, and these indicator details and results are presented in Table 18 and Table 19 in the Annex.

Lightcast data from online job postings including, when available, minimum experience requirements and salary ranges associated with each occupation were used to construct the following indicators at the 4-digit occupation level:

- **Number of job postings (2024)** captures employer demand and recruitment activity. Unlike SEPE contracts, which measure realized hires, job postings capture employer intentions, which is especially valuable for detecting emerging occupations.
- **Percentage change in the number of job postings (2024 vs 2023 and 2024 vs 2019)** reveals short- and medium-term trends in demand growth. The five-year horizon is particularly relevant for assessing post-pandemic structural shifts. Increasing trends may point to expanding sectors or occupations, while declines may suggest automation, obsolescence, or reduced hiring activity. However, trends may also reflect changes in posting platforms, recruitment strategies, or the intensity of advertising, which can affect comparability over time.
- **Percentage change in minimum required years of work experience (2024 vs 2023 and 2024 vs 2019)** signals shifts in employer expectations. A decline in experience requirements could suggest labor shortages, prompting employers to lower application standards to access a broader pool of applicants. However, this indicator could also reflect real changes in occupational complexity or work requirements. Not all postings include experience details, and stated requirements may not always align with actual hiring practices.
- **Percentage change in median salaries (2024 vs 2023, 2024 vs 2019, and 2024 vs 2018-2023 average)** also signals shifts in employer expectations. Rising wages can indicate growing demand, talent shortages, or improved working conditions, whereas stagnant or declining wages may reflect low attractiveness or sectoral pressures. Yet, salary data are not consistently reported and may be biased toward higher-end postings, limiting the representativeness of the measure for some occupations.

In summary, the combination of SEPE and Lightcast indicators offers a multidimensional view of occupational trends in the Spanish labor market. SEPE indicators capture employment flows and unemployment dynamics, while Lightcast data provide real-time signals of employer demand and expectations. Each indicator has strengths and limitations, and together they allow for a comprehensive identification of critical occupations. A summary of all indicators, including sources, time frames, and units, is presented in Table 1 below for reference.

Table 1: Indicators used in the top-down analysis

Indicator	Source	Time Frame	Unit	Description
New contracts	SEPE	2024	Absolute value	Number of new employment contracts

Percentage change in new contracts	SEPE	2024 vs. 2023 and 2024 vs. 2021	Percentage	Yearly and three-year percentage change in number of new contracts
Unemployed workers	SEPE	2024	Absolute value	Number of unemployed workers
Percentage change in unemployed workers	SEPE	2024 vs. 2023 and 2024 vs. 2021	Percentage	Yearly and three-year percentage change in the number of unemployed workers
Job market absorption ratio (new contracts / unemployed)	SEPE	2024	Percentage	New contracts per unemployed Worker
Percentage change in job market absorption ratio	SEPE	2024 vs. 2023 and 2024 vs 2021	Percentage	Yearly and three-year percentage change in new contracts per unemployed worker
Number of job postings	Lightcast	2024	Absolute value	Number of job postings
Percentage change in number of job postings	Lightcast	2024 vs. 2023 and 2024 vs. 2019	Percentage	Yearly and five-year percentage change in the number of job postings
Percentage change in minimum experience required	Lightcast	2024 vs. 2023 and 2024 vs. 2019	Percentage	Yearly and five-year percentage change in the average of minimum years of experience required for a job
Percentage change in median salary in job postings	Lightcast	2024 vs. 2023; 2024 vs. 2019; 2024 vs 2018-2023 average	Percentage	Yearly and five-year percentage change, and percentage change compared to the 2018-2023 average, in the median salary for job postings

2.1.6 Selection of Reference Years

The selection of reference years aimed to balance short-term market dynamics with a stable long-term perspective. The main comparison for all indicators was made between 2024 and 2023 to capture recent developments. However, a second reference point was needed to assess structural changes in the labor market beyond year-to-year variation. Ideally, this would have been 2021, but the COVID-19 pandemic introduced severe distortions in 2020 and 2021, rendering these years inadequate for reliable comparison.

For Lightcast data, which tracks online job postings, 2019 was chosen as the long-term reference year. This decision reflects the fact that job vacancies in 2021 were still below pre-pandemic levels, and using 2019 provides a more stable baseline unaffected by the exceptional disruptions caused by the pandemic. The comparison between 2024 and 2019 thus offers a clearer picture of post-pandemic transformations in labor demand.

Due to the unavailability of SEPE data for 2019, the year 2021 was selected as a secondary reference to mitigate short-term volatility and capture more stable labor market trends. Relying solely on the 2023 comparison would risk capturing short-term volatility rather than long-term shifts. Using 2021 as an additional reference year for SEPE indicators allows for the identification of more persistent occupational trends while minimizing the influence of year-specific shocks.

2.1.7 Selection of Thresholds

Next, thresholds are selected to identify which occupations have indicator values high enough to be classified as critical. For each occupation, all indicators listed in Table 1 were calculated, resulting in approximately 400 observations per indicator. To identify the occupations that stood out the most based on these metrics, two statistical thresholds were considered for each indicator, following the best practices from other COL applications:

1. **The 75th percentile**, which captures the top 25% of occupations for each indicator.
2. **The median plus 50% (1.5 times the median)**, which, unlike the 75th percentile, does not constrain the number of selected occupations to a fixed proportion (i.e., 25%). Instead, it is defined only by the median indicator value, and the number of selected occupations may vary depending on the entire distribution of indicator values.

The least stringent threshold was chosen for each indicator to ensure that the selection process was not overly restrictive. For example, if the 75th percentile threshold selected 100 occupations while the median-based threshold selected 110, then the median-based threshold was applied. The methodology thus casts a wider net in identifying critical occupations, which will be validated and refined through the bottom-up qualitative consultations.

In addition to statistical thresholds, a set of minimum data availability criteria was established to exclude indicators with insufficient underlying observations. These limits were intentionally kept low to avoid discarding potentially critical occupations arising from data sparsity. The guiding principle was to prioritize inclusiveness in the initial list of occupations and later refine the results through expert validation during focus group discussions. For SEPE contract-based indicators, the minimum threshold was set at 10 contracts per occupation per year. For SEPE unemployment indicators, the cut-off was 50 registered unemployed individuals annually.

In the case of Lightcast data, a minimum of 10 job postings per year was required to calculate indicators related to the volume of demand. For salary indicators, two conditions had to be met: at least 10 job postings with salary information and a minimum of 10% of all postings in that occupation reporting a salary. For experience-related indicators, the requirement was similarly set at a minimum of 10 postings, with at least 5% containing information on required years of experience. These filters ensured a basic level of representativeness without narrowing the analysis prematurely.

This combination of flexible thresholds and minimal data constraints reflects the analysis' emphasis on analytical inclusivity. By expanding the set of initially selected occupations, the methodology favors over-identification rather than the exclusion of potentially relevant profiles, allowing for later refinement through qualitative validation. This strategy helps ensure that occupations with structural importance are not prematurely discarded due to temporary data gaps or underreporting.

Box 2: Indicator year- vs benchmark year-based thresholds

Often, COL methodologies define thresholds using a benchmark period of strong growth and economic stability. Indicators are then constructed using data from later years, and their values are compared with thresholds as defined in the benchmark years to determine whether they are critical occupations. This has the advantage of allowing the total number of shortage occupations to shrink or grow according to economy-wide skill imbalances.

In contrast, this study required an alternative approach due to data availability constraints and the disruptive effect of the COVID-19 pandemic. SEPE data was not available pre-pandemic, and it is not desirable to define all thresholds in a post-pandemic period in which labor markets and labor market data were affected. Thus, thresholds were simply defined in the data used for indicator construction. While this approach diverges from the benchmark-based thresholding methodology typically used in other COL studies, it was deemed most appropriate given the fragmented availability of historical data and the goal of maintaining comparability across indicators. Future iterations of the COL may adopt a single benchmark year to define thresholds once longer time series become available and data consistency improves across sources.

2.1.8 Definition of the final set of indicators

To ensure that each indicator contributes unique information to the identification of critical occupations, a correlation analysis was conducted. The objective was to detect and remove redundant indicators that convey overlapping labor market signals. By minimizing redundancy, the final list of indicators better reflects distinct labor market dimensions and avoids double-counting similar trends.

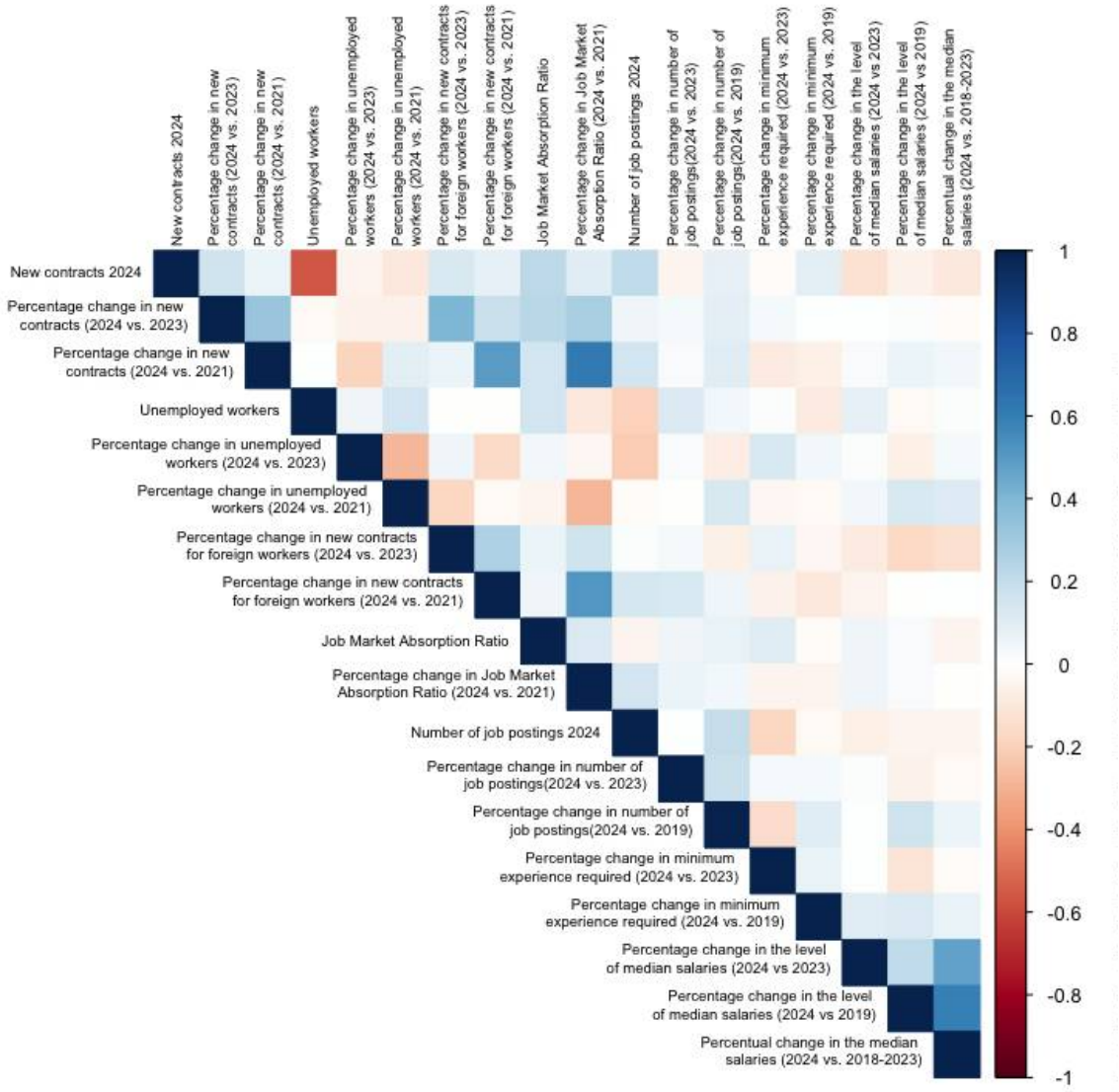
Pairwise correlations were computed for all indicators, and those with a correlation coefficient exceeding 70% were flagged as redundant. Only one indicator – percentage change in the job market absorption ratio from 2023 to 2024 – was excluded based on this criterion because it exhibited a strong correlation with the percentage change in the number of new contracts from 2023 to 2024. Only the latter was retained in the final indicator list. The final correlation matrix, shown in Figure 5, includes the final set of indicators. This analysis aimed to ensure that each indicator contributes distinct and non-duplicative information.

As explained, the final list of top-down critical occupations also excluded indicators based on foreign worker contract growth. While including these indicators helps identify occupations with a historical reliance on foreign workers, the final list used in this project excluded them to preserve the focus on structural labor market dynamics. As shown in Table 19 in the Annex, the inclusion of foreign worker-related indicators has a moderate impact on the final selection of occupations, adding 15 occupations and removing 11 occupations from the list, and increasing its length from 96 to 100 occupations. For occupations on the list only after including foreign worker indicators (e.g., “Midwifery professionals” and “Audiologists and speech therapists”), the bottom-up analysis was crucial for validating whether they should be considered critical.

The indicator selection and correlation analysis ensure that the final list of indicators blends a range of meaningful and unique labor market signals. The selected indicators, once validated through this procedure, serve as the foundation for identifying critical occupations. Their combined use offers a

comprehensive and non-redundant picture of labor market pressures, allowing for more accurate assessments and policy-relevant insights.

Figure 5: Correlation matrix of final indicators



2.1.9 Generation of the COL

Occupations were considered critical if they exceeded the defined threshold in at least 50% of the indicators available for that occupation. This approach follows the COL methodology typically used in other countries. This results in a final list of 96 occupations identified as critical in the top-down analysis, which are presented in Chapter 3.

2.1.10 Robustness checks and sensitivity analyses

To verify the consistency and reliability of the results, three robustness checks were conducted, each targeting a different potential source of methodological sensitivity. The first assessed how varying the

threshold parameters – both the percentile cut-off and the increment over the median – influence the list of critical occupations. The second examined the impact of excluding individual indicators, to test whether the identification of critical occupations was overly dependent on any single indicator. Finally, a third test explored whether short-term fluctuations in absolute indicators, by relying on a single year of data, might distort the results; this was done by recalculating the indicators using multi-year averages and comparing the outcomes. Together, these checks confirm that, while the list of occupations adjusts under alternative scenarios, the results are broadly robust and do not change abruptly with small changes in methodology.

Sensitivity to threshold parameters

To assess how threshold choices influence the COL, a two-dimensional sensitivity analysis was conducted by varying both the percentile and median-based threshold parameters. The 75th percentile threshold was systematically adjusted between the 60th and 90th percentiles, while the increment over the median ranged from 30% to 70%. As expected, modifying these thresholds changes the size and composition of the COL, since tighter or looser criteria naturally include or exclude more occupations. However, the results in Table 2 show that these changes occur in a gradual manner, without abrupt jumps or disproportionate shifts that would suggest instability. This indicates that slight threshold adjustments do not have disproportionate effects on the COL. Table 20 in the Annex displays the 26 occupations which are added using a lower threshold combination of 70th percentile and median plus 45%, as well as the 16 occupations which are dropped when using a higher threshold combination of 80th percentile and median plus 55%.

Table 2: Sensitivity of the occupation list to combined threshold rules

Percentile Threshold	Median + x%								
	30	35	40	45	50	55	60	65	70
60	163 (69.8%)	158 (64.6%)	157 (63.5%)	156 (62.5%)	155 (61.5%)	155 (61.5%)	155 (61.5%)	155 (61.5%)	155 (61.5%)
65	155 (61.5%)	146 (52.1%)	143 (49%)	139 (44.8%)	139 (44.8%)	137 (42.7%)	132 (37.5%)	130 (35.4%)	130 (35.4%)
70	145 (51%)	132 (37.5%)	128 (33.3%)	122 (27.1%)	119 (24%)	112 (16.7%)	106 (10.4%)	97 (1%)	91 (-5.2%)
75	139 (44.8%)	122 (27.1%)	115 (19.8%)	101 (5.2%)	96 (0%)	90 (-6.2%)	82 (-14.6%)	74 (-22.9%)	68 (-29.2%)
80	139 (44.8%)	121 (26%)	112 (16.7%)	98 (2.1%)	86 (-10.4%)	80 (-16.7%)	71 (-26%)	64 (-33.3%)	58 (-39.6%)
85	139 (44.8%)	121 (26%)	112 (16.7%)	98 (2.1%)	85 (-11.5%)	75 (-21.9%)	66 (-31.2%)	60 (-37.5%)	52 (-45.8%)
90	139 (44.8%)	121 (26%)	112 (16.7%)	98 (2.1%)	85 (-11.5%)	75 (-21.9%)	66 (-31.2%)	57 (-40.6%)	48 (-50%)

Note: Values indicate the number of occupations included in the COL under each combination of thresholds. Column headers indicate the median-based thresholds (i.e., 1.3 to 1.7 times the median), while row labels indicate percentile thresholds from the 60th to the 90th percentile. The percentages in parentheses show the change in number of occupations relative to the baseline scenario (75th percentile and median+50%).

Sensitivity to indicator composition

The second robustness check examined the impact of each individual indicator on the composition of the final occupation list. To assess this, a sensitivity analysis was conducted by removing one indicator at a time and observing how the list of selected occupations changed relative to the baseline. For each scenario, three outcomes were recorded: the number of occupations that remained unchanged, the number that were no longer listed, and the number of new occupations added. For example, removing the indicator *"Percentage change in job market absorption ratio (2024 vs. 2021)"* led to the exclusion of 26 occupations and the inclusion of 5 new ones when compared, suggesting a strong role in shaping the final output. This exercise aimed to identify which indicators had a stronger influence on the overall results and which ones contributed marginally to the identification of critical occupations.

The results, presented in Table 3, revealed considerable variation in the weight of different indicators. The most significant expansions in the occupation list occurred when *"Number of job postings"* and *"Percentage change in number of job postings (2024 vs. 2023)"* were removed, resulting in the inclusion of 10 and 9 new occupations, respectively. This suggests that these indicators acted as relatively strict filters, excluding roles that met other criteria but did not score highly on employer demand signals. Conversely, the indicators whose removal led to the highest number of occupations being dropped were *"Percentage change in the job market absorption ratio (2024 vs. 2021)"* and *"Percentage change in the number of new contracts (2024 vs. 2023)"*, with 26 and 25 occupations no longer meeting the selection threshold respectively. These findings indicate that certain variables had a stronger role in sustaining the inclusion of occupations in the final list. While salary and experience indicators did not introduce any new occupations when excluded, their removal led to the exclusion of between 9 and 14 occupations. This reinforces their role as complementary filters that do not lead to new critical occupations but help to confirm and filter the classification of occupations supported by other indicators.

Table 3: Effect of individual indicator removal on the final occupation list

Indicator removed	Number of occupations no longer listed	Number of new occupations listed
New contracts	21	8
Percentage change in the number of new contracts (2024 vs 2023)	25	1
Percentage change in the number of new contracts (2024 vs 2021)	20	5
Number of unemployed	8	3
Percentage change in the number of unemployed (2024 vs 2023)	11	8
Percentage change in the number of unemployed (2024 vs 2021)	9	6
Job market absorption ratio	17	3
Percentage change in the job market absorption ratio (2024 vs 2021)	26	5
Number of job postings	21	10
Percentage change in number of job postings (2024 vs 2023)	14	9
Percentage change in number of job postings (2024 vs 2019)	21	6

Percentage change in the level of average minimum experience required (2024 vs 2023)	12	0
Percentage change in the level of average minimum experience required (2024 vs 2019)	9	0
Percentage change in the level of median salaries (2024 vs 2023)	14	0
Percentage change in the level of median salaries (2024 vs 2019)	10	0
Percentage change in the median salaries (2024 vs 2018-2023 average)	12	0

Sensitivity to short-term fluctuations in absolute indicators

The objective of this additional test is to assess whether the list of critical occupations is sensitive to year-specific fluctuations in absolute indicators. Three indicators are expressed in absolute (as opposed to relative) terms: the number of new employment contracts, the number of unemployed workers, and the number of job postings. In the main analysis, all indicators were calculated using 2024 data exclusively – the most recent full year available. However, this data may be subject to yearly fluctuations, potentially affecting the stability of the results. This sensitivity exercise aimed to assess whether using a multi-year average instead of single-year values would significantly alter the list of critical occupations generated through the top-down approach.

The sensitivity exercise replaces each of the three absolute indicators using an average over a longer time frame. For SEPE-based variables (new contracts and unemployed workers) the new values are computed using the sum across all available years from 2021 to 2024. For the Lightcast-based indicator (job postings), two alternative time frames are used: 2021–2024 and the maximum available range of 2019–2024, to exploit the longer historical coverage of this dataset. The exercise involves substituting each original indicator with its multi-year version – first individually and then in groups – and recalculating the list of critical occupations under each scenario.

The sensitivity analysis confirms the robustness of the final list of critical occupations. The results in Table 4 show that the list of critical occupations is highly stable, even when the absolute indicators are recalculated using multi-year averages instead of 2024-only values. In all scenarios tested – whether replacing a single indicator or replacing multiple simultaneously – the number of unchanged occupations remained high, never falling below 93 out of the original 97 listed. The most conservative scenario, where all three absolute indicators were replaced using their longest available historical ranges, led to just four occupations being excluded and one new occupation being added. This limited variation confirms that the identification of critical occupations is not overly dependent on year-specific fluctuations in these indicators.

The few changes observed were concentrated in a small number of occupations. The occupations most frequently affected by the indicator substitution were "Air traffic safety electronics technicians" (3155), "Client information workers not elsewhere classified" (4229), and "Metal working machine tool setters and operators" (7323), each of which was excluded in multiple scenarios. The only new occupation added in any test was "Street vendors (excluding food)" (9520), which appeared when the Lightcast job posting indicator was extended to the full 2019–2024 period.

Table 4: Sensitivity to multi-year averages of absolute indicators

Exchanged Indicator	Number occupations no longer listed	Number of new occupations listed
New contracts 2021-2024	0	0
Unemployed workers 2021-2024	1	0
Number of job postings 2021-2024	2	0
Number of job postings 2019-2024	3	1
New contracts 2021-2024, Unemployed workers 2021-2024	1	0
New contracts 2021-2024, Number of job postings 2021-2024	2	0
Unemployed workers 2021-2024, Number of job postings 2021-2024	3	0
New contracts 2021-2024, Unemployed workers 2021-2024, Number of job postings 2021-2024	3	0
New contracts 2021-2024, Unemployed workers 2021-2024, Number of job postings 2019-2024	4	1

These robustness checks demonstrate that changes in methodology do not lead to disproportionate or sudden changes in results. Adjusting the thresholds has predictable but gradual impacts on the results, while removing individual indicators or replacing absolute indicators measured in 2024 with multi-year averages has only moderate effects on the results. This stability strengthens confidence in the results, demonstrating that the identified occupations consistently emerge as critical across alternative scenarios. As such, the list serves as a strong foundation for further policy dialogue and qualitative assessment.

2.2 Bottom-Up Analysis

2.2.1 Summary Objective and Contribution

The bottom-up analysis complements the top-down assessment by incorporating the perspectives of employers, industry stakeholders, and policymakers. The main goal of this research stage is to validate, refine, and contextualize the preliminary list of critical occupations obtained from the top-down, quantitative analysis. While the top-down phase relies on labor market indicators, such as employment trends, vacancy rates, and wage dynamics, to identify potential labor shortages, it may not capture the full range of sector-specific recruitment challenges, evolving skill requirements, or institutional barriers that shape occupational demand. The bottom-up phase, therefore, bridges this gap by generating qualitative insights directly from those engaged in hiring, workforce planning, and labor migration governance. This

phase includes 7 FGDs with employer and industry representatives in different sectors, 20 KIIs also with employer representatives, and 7 KIIs with policymakers and government representatives.

This phase adds substantial value to the COL methodology by grounding the quantitative findings in lived labor market experiences. Through a series of FGDs and KIIs with employers and policymakers, the bottom-up analysis aims to verify the relevance of the preliminary occupations flagged as critical, uncover additional occupations or roles not captured in the top-down analysis, and provide detailed information on skill and competency gaps that may not be reflected in administrative data. Furthermore, it explores employer openness to hiring migrant workers and assesses the perceived feasibility and relevance of GSPs and other labor mobility mechanisms. This stage culminates with the definition of the final COL, calculated at the national level through the consolidation of quantitative and qualitative findings – the methodology used for consolidation of findings is detailed in section 2.3. By integrating stakeholder perspectives through the bottom-up analysis, the study ensures that the final list of critical occupations is not only statistically robust but also aligned with real-world labor market dynamics and policy considerations.

2.2.2 Sampling and Methodological Considerations

The bottom-up analysis combined FGDs and KIIs with a total of 57 stakeholders across Spain's labor market, providing sectoral and geographic breadth to the qualitative evidence base. Of these, 36 were enterprises, 8 represented industry associations, 5 were unions, and the remaining 8 were public sector entities. Participants were selected to capture a range of firm sizes, institutional roles, and territorial perspectives relevant to the occupations flagged in the top-down phase. To structure the FGDs and guide participant selection, occupations identified in the top-down analysis were mapped to broader economic sectors. Stakeholders represented several different sectors – including agriculture, fishery, livestock, forestry, manufacturing, construction, scientific, intellectual and creative services, hospitality, transport, healthcare, education, care and cleaning – and were drawn from Spain's different Autonomous Communities, including Andalusia, Extremadura, Castilla-La Mancha, Madrid, the Basque Country, Valencia, Galicia, La Rioja, and Navarra, as well as several stakeholders operating at the national level. While the study did not apply a statistically representative sampling frame, considerable care was taken to include employers from both urban and rural areas, as well as different-sized companies.

Roughly 50% of participating employers were from Micro, Small and Medium Enterprises (MSMEs), and over 30% were based in rural or semi-rural municipalities. This helped to ensure that the study did not disproportionately reflect the perspectives of large employers or urban labor markets. Nonetheless, participation bias cannot be ruled out. Some sectors, such as scientific services and construction, had a higher concentration of MSME representatives, possibly shaped by stakeholder availability and willingness to engage. Similarly, union representation was stronger in healthcare and education than in other sectors, which may have influenced the framing of shortages in those domains. These limitations are acknowledged when interpreting sector-specific findings, particularly where stakeholder views diverge. While the sample does not claim to be exhaustive, it offers a nuanced, grounded understanding of recruitment bottlenecks and occupational shortages across Spain. Where limitations exist, particularly in the underrepresentation of the informal sector or the smallest rural employers, findings are interpreted with caution.

2.2.3 FGDs with Employer Representatives

The FGD component of the bottom-up analysis was designed to validate and refine the preliminary list of critical occupations by engaging directly with employer representatives across strategically selected sectors and across Spain's different regions. A total of seven FGDs inform the study, each corresponding to a broad

sectoral grouping that aligns with areas of high labor demand and significant migrant participation. These include:

(i) Manufacturing (including industrial machinery)

(ii) Construction, Installation, and Assemblers

(iii) Agriculture (including livestock, forestry, and fishing)

(iv) Restaurants, Customer Service, and Hospitality

(v) Scientific, Intellectual and Creative Services

(vi) Healthcare and Education

(vii) Care, Cleaning, and Housekeeping

This categorization was informed by a mixed-methods approach, combining findings from the quantitative analysis of SEPE administrative data, particularly the share of foreign contracts and other demand-side indicators, with insights from the literature and local labor market expert consultations.

To operationalize the discussions, all occupations initially identified as potentially critical in the top-down phase were distributed across the seven FGDs according to their best conceptual fit. This allocation was based on a qualitative exercise conducted by the research team, which involved cross-checking each occupation's ISCO-08 description and matching it to the most relevant sectoral grouping. Within each FGD, participants were selected to represent a diverse selection of employers with knowledge of the occupations flagged as applicable to that sector. This ensured the validation exercise was grounded in first-hand labor market experience. In instances where it was not possible to secure FGD participants with knowledge of certain occupations, either due to availability constraints or the specificity of the roles, targeted KIIs were pursued instead. These KIIs are detailed in the subsequent subsection of this report.

The FGD protocol was structured to explore three core areas: sector-specific recruitment challenges and occupational shortages, validation of the preliminary list of critical occupations, and employer perspectives on hiring migrant workers from Latin America. A standard set of questions guided the discussion across all groups, with additional sector-specific prompts included to capture nuances in labor demand, technological transformation, and workforce planning. Participants were first asked to describe the hardest-to-fill roles in their sector, along with the qualifications, experience levels, and technical or soft skills typically required. They were then presented with a list of potentially critical occupations tailored to each sector and invited to validate, amend, or reject these occupations based on their own experiences. Finally, the FGDs examined employer attitudes toward hiring migrant workers, including perceived barriers to recruitment, awareness of circular migration schemes, and views on hiring from Colombia, Ecuador, or the Dominican Republic. The discussions concluded with forward-looking questions on emerging roles and policy recommendations to address sectoral labor shortages. The complete FGD protocol can be found in the Annex.

2.2.24 KIIs with Employer Representatives

To complement the findings from the FGDs, twenty KIIs were conducted with employer representatives across the sectors included in the bottom-up analysis. These interviews served two main purposes: first, to allow for deeper, one-on-one engagement with selected FGD participants who had demonstrated extensive knowledge or represented critical sub-sectors, and second, to gather evidence from employers whose perspectives were not captured through the FGDs due to availability constraints or because the occupations they represent fall outside the main sectoral groups. This approach enabled the research team to expand the qualitative evidence base, particularly for occupations that are either highly specific or institutionally siloed.

The KIIs followed a semi-structured format that mirrored the thematic areas of the FGD protocol while allowing for more detailed discussions of company-level workforce challenges, recruitment practices, and skill needs. Interviewees were first asked to identify hard-to-fill occupations within their organizations and elaborate on the underlying reasons for recruitment difficulties. For each occupation listed, they were prompted to describe the required educational qualifications, experience levels, and technical and soft skill profiles, as well as any regulatory or procedural barriers that may impact recruitment. The discussions also included a validation of the preliminary list of critical occupations generated through the top-down analysis, with employers invited to confirm, contest, or expand upon the identified roles. This was followed by an exploration of employer experiences with hiring migrant workers, particularly from Latin America, including perceived barriers to international recruitment and the effectiveness of existing strategies. The complete KII protocol can be found in the Annex.

These KIIs added depth and nuance to the FGD findings in several key respects. First, they allowed for a more granular understanding of occupational shortages within specific firms, including staffing needs, recruitment bottlenecks, and employer-led strategies to overcome these challenges. Second, they provided additional validation for occupations identified through the top-down analysis that had not been widely discussed in the FGDs, thereby reinforcing their relevance. Third, the one-on-one format facilitated candid reflections on company-level initiatives to integrate migrant workers, prepare for future workforce shifts, and respond to technological transformation. Finally, the KIIs filled critical evidence gaps for occupations not covered in the group discussions, ensuring that the qualitative phase remained comprehensive and inclusive of the full spectrum of potentially critical roles.

2.2.5 Consultations with Policymakers and Institutions

To complement employer perspectives and ensure findings are grounded in a broader policy context, consultations were conducted with representatives from institutions directly involved in labor market regulation, employment services, and migration policy in Spain. These consultations were essential to better understand the institutional frameworks that shape labor mobility, identify structural barriers to filling occupational shortages with local and migrant labor, and assess the feasibility of implementing mechanisms such as GSPs. The institutions consulted included:

- Secretary of State for Migration
- Sub-Directorate-General for Migration Analysis, under the Ministry of Inclusion, Social Security and Migration
- Directorate-General for Migration Management, under the Ministry of Inclusion, Social Security and Migration
- Secretary of State for Economics and Business Development
- Bank of Spain
- Public State Employment Service (SEPE)
- Servei Públic d'Ocupació de Catalunya (SOC)[49]

The interviews followed a structured protocol covering four thematic pillars: labor market trends and occupational shortages, the design and effectiveness of migration pathways, the integration of migrants

[49] To incorporate regional perspectives into the institutional analysis, the research team initially contacted public employment services in both Andalusia and Catalonia - the two autonomous communities most frequently cited by employers and stakeholders as having distinct labor market dynamics. Ultimately, only the Servei Públic d'Ocupació de Catalunya (SOC) agreed to participate in the study.

into the Spanish labor market, and regional labor market heterogeneity. Participants were first asked to identify the sectors and occupations currently facing the most acute labor shortages and the main challenges Spain encounters in meeting these needs with the local workforce. This was followed by an in-depth discussion of existing migration pathways, including seasonal schemes (i.e., GECCO), regularization through social and employment ties, and the incorporation of international students and highly qualified professionals, and their respective contributions to addressing workforce gaps. Policymakers were also asked to assess the adequacy of the current Catalogue of Hard-to-Fill Occupations and the challenges posed by the recognition of foreign qualifications, particularly for technical roles. The protocol for the consultations can be found in the Annex.

In addition, the consultations explored the institutional landscape for migrant integration. This included current strategies for economic inclusion, the perceived effectiveness of existing programs and institutional structure, and the feedback mechanisms in place to assess their outcomes. Regional labor market differences were also discussed, particularly the extent to which labor migration can contribute to addressing localized shortages in areas such as Catalonia and Andalusia. Finally, respondents were invited to propose regulatory or policy adjustments that could enhance the alignment between migration channels and labor market needs and reflect on the potential for expanded labor migration from Latin America to serve as a sustainable response to current and future occupational gaps. These interviews played a critical role in contextualizing employer perspectives, particularly in identifying institutional and regulatory enablers and constraints that affect the feasibility of labor mobility solutions.

2.2.6 Qualitative Data Analysis Strategy

A structured analytical approach was applied to process and synthesize the qualitative evidence collected through the FGDs and KIIs. All transcripts and field notes were first reviewed and cleaned to ensure consistency in formatting and content and subsequently translated from Spanish to English to facilitate standardized analysis. Each transcript was tagged with metadata capturing the type of engagement (FGD or KII), sector, and respondent profile (e.g., SME representative, large employer, or government official). This initial organization enabled efficient filtering and comparison across stakeholder groups and themes.

Analysis of FGDs and KIIs with Employers and Industry Representatives

The qualitative analysis followed a combined deductive and inductive approach to ensure both alignment with research objectives and the inclusion of emergent themes. A set of predefined (deductive) themes was developed based on the study's guiding questions and interview protocols. These included: (i) hard-to-fill occupations (i.e., those spontaneously mentioned by employers before seeing the top-down COL), (ii) validation of top-down COL, (iii) skills gaps (technical and soft), (iv) recruitment strategies, (vi) hiring of migrant workers, (vi) views on migration pathways, (vii) institutional and regulatory bottlenecks, and (viii) proposed policy improvements. In parallel, inductive analysis was used to capture any other new or unexpected insights that emerged during the data review, such as recurring mentions of specific sectoral shifts, emerging occupations, or unforeseen procedural barriers. Sector-specific summary sheets were developed to consolidate the key findings and can be found in the Annex.

Moreover, frequency and co-occurrence analyses were conducted to quantify the strength of evidence across sources and structure the qualitative inputs for the COL. Mentions of hard-to-fill occupations were tallied across transcripts, and distinctions were made between those raised spontaneously versus those mentioned only in reaction to the top-down list. New occupations that emerged without prior prompting were flagged as "bottom-up only" candidates for inclusion. In addition, the co-occurrence of key concepts – such as occupations frequently linked to language barriers, regulatory bottlenecks, or integration challenges – was systematically noted to support future prioritization and policy analysis. This

comprehensive strategy ensured that qualitative evidence could be integrated with quantitative findings in a consistent and methodologically rigorous manner.

Analysis of Consultations with Policymakers and Institutional Stakeholders

The analysis of consultations with policymakers and institutional stakeholders followed a parallel yet distinct approach from that used for employer interviews and FGDs. Given the policy-oriented nature of these interviews, the coding framework was adapted to emphasize regulatory frameworks, institutional coordination, and strategic priorities related to labor migration. Key thematic areas included: (i) identification of labor shortages from an institutional perspective; (ii) evaluation of existing migration pathways (e.g., GECCO, regularization via *arraigo*, study-to-work transitions); (iii) challenges in recognition of foreign qualifications; (iv) strategies for migrant integration; and (v) the alignment between labor market needs and Spain's vocational and higher education systems. In addition, region-specific perspectives on labor shortages and migration strategies were identified, when possible, to capture Spain's internal labor market heterogeneity.

Each consultation transcript was reviewed and coded thematically. Attention was given not only to the content of the responses but also to the degree of inter-institutional convergence or divergence on key issues. Insights were systematically compared with employer findings to assess consistency in the perceived barriers and enablers of migrant workforce integration. In cases where government respondents confirmed or contextualized employer perspectives – for instance, regarding delays in credential recognition or limitations in the Catalogue of Hard-to-Fill Occupations – this triangulation served to strengthen the overall evidence base. Conversely, areas of divergence were documented and are considered in the formulation of policy recommendations, particularly where institutional and private sector assessments differ on the feasibility or strategic value of labor migration pathways.

2.3 Consolidation of Top-Down and Bottom-Up Results

The consolidation phase represents the final analytical stage in the development of the COL, in which evidence generated through the top-down and bottom-up approaches is systematically compared to determine which occupations merit inclusion. This process draws on the structured findings of the quantitative labor market analysis and the sectoral qualitative consultations, applying expert judgment to assess the consistency, reliability, and depth of the available information. The goal of the consolidation process is to arrive at a selective and evidence-backed list of occupations that are both difficult to fill and of strategic importance for the Spanish labor market. The consolidation process is not based on a rigid scoring or weighting system but rather on a structured qualitative matrix that captures the different dimensions of evidence for each occupation and enables triangulation across data sources.

To support this task, a tool was developed, listing all 4-digit ISCO occupations and incorporating both quantitative and qualitative indicators:

- **Top-Down Flag:** Indicates whether the occupation was identified as potentially critical through the quantitative (top-down) analysis, based on the previously described statistical indicators.
- **Initial Mentions in FGDs**: Records whether stakeholders in FGDs raised the occupation as difficult to fill during the open-ended portion of the conversation, before being shown the preliminary list of critical occupations.

- **Initial Mentions in KIIs:** Records the same for KIIs with employers.
- **Validation of Preliminary COL:** Indicates whether, after being presented with the preliminary list of critical occupations, stakeholders agreed that the occupation in question should be considered critical.
- **Suggested Additions**: Flags occupations that were explicitly proposed for inclusion in response to a follow-up question on whether there were additional hard-to-fill roles missing from the list.
- **Sector Assignment:** Each occupation is assigned to the sector most relevant to its functional domain, to facilitate comparison with qualitative findings structured by sector.
- **Observation Fields:** Include contextual notes on occupations raised in multiple sectors, cases where stakeholders referred to a sub-occupation within a broader 4-digit category, and any sector-specific nuances relevant to the interpretation of evidence.

This matrix allows for a **comprehensive occupation-by-occupation** review of the available evidence, highlighting points of convergence and divergence between the top-down and bottom-up perspectives. To ensure consistency and analytical rigor, validation criteria were applied using a flexible but systematic approach. While a single mention of an occupation was sufficient to flag it as "mentioned" or "suggested," greater weight was given to occupations mentioned by multiple stakeholders, across different sectors, or with detailed qualitative justification. Convergence between the qualitative feedback and top-down data further strengthened the case for inclusion. Where only bottom-up support was available, explanatory notes were carefully reviewed to assess plausibility and relevance. The process pays particular attention to:

1. Coherence across data sources: Stronger weight is given to occupations for which both top-down and bottom-up evidence point to persistent labor shortages.
2. Initial mentions: Occupations spontaneously raised by stakeholders (before being presented with the preliminary list) are considered to have stronger qualitative salience.
3. Consistency and detail of qualitative insights: Occupations for which stakeholders provided detailed explanations regarding recruitment challenges, skills gaps, and strategic importance are prioritized.
4. Relevance to identified strategic sectors: Occupations within sectors flagged as critical by institutional stakeholders (e.g., construction, healthcare, transport, care, and STEM-related fields) are examined with particular care.

The final decision on inclusion in the COL is made through a professional judgment process, informed by the overall strength, consistency, and credibility of the evidence available for each occupation. This approach mirrors international best practices in COL development, including experiences in countries such as Indonesia and Malaysia, where final list decisions are guided not by strict quantitative rules but by a structured review of the evidence base. To be retained in the final list, an occupation **typically met one of the following conditions**: (i) it was identified in the top-down analysis and strongly validated by stakeholders during the bottom-up consultations, or (ii) it was not flagged in the top-down but was consistently emphasized across qualitative sources as hard to fill. In cases where there was top-down evidence but stakeholder feedback was inconclusive or weak, the occupation was generally not included. This reflected a cautious interpretation of the evidence, whereby occupations lacking clear validation, whether due to stakeholder uncertainty, limited discussion time, or sector-specific factors, were not retained in the final list, as the available evidence was not deemed strong or consistent enough to justify inclusion. While this approach may exclude some roles that could be considered critical under a more expansive definition, it ensures that the final COL rests on a solid and triangulated evidence base.

While the COL was developed through a comprehensive and resource-intensive process, its long-term value depends on the ability to update and maintain it in a sustainable manner. To that end, future iterations need not replicate the full methodological infrastructure each time. Instead, a tiered update mechanism could be institutionalized, where the top-down and bottom-up methodology is repeated every two or three years, for instance, while interim validations are conducted every six months through quantitative diagnostics and lighter-touch employer consultations or surveys in priority sectors. The consolidation matrix developed for this study can serve as a foundational tool for tracking change over time, supporting analytical consistency and reducing duplication of effort. The consultation process can also be improved through open calls for evidence, while the methodology can be enhanced to conduct additional analysis at a subnational level. Embedding this process within an existing institution could further enhance its sustainability, enabling Spain to maintain a responsive, evidence-based framework for guiding skills training and labor migration policies and programs.

CHAPTER 3: CRITICAL OCCUPATIONS ANALYSIS RESULTS

3.1 Top-Down List of Critical Occupations

The application of the COL methodology generated an initial list of potentially critical occupations in the Spanish labor market. This list results from a quantitative exercise that combines multiple indicators from both SEPE and Lightcast, reflecting trends in labor supply, demand, and absorption. Occupations were included if they exceeded the selected thresholds in at least half of the indicators available, ensuring that only those with strong and multidimensional labor market signals were retained. In total, the top-down application of the COL methodology yielded 96 potentially critical occupations, which, as described in the methodology section, were subsequently categorized into one of seven sectors.

After the top-down list was produced, occupations were subsequently assigned to seven sectoral groups to facilitate the organization of qualitative consultations. The initial selection of sectors for qualitative consultation was made in coordination with the different project stakeholders, drawing on both quantitative and qualitative criteria. SEPE data on foreign hiring and other demand-side indicators – such as the ratio of contracts to unemployed job seekers – were reviewed to help identify sectors characterized by high migrant participation or pronounced labor shortages. This sector list was refined through literature review and expert input to ensure alignment with policy priorities and operational feasibility. While many assignments were straightforward (e.g., builders to construction, manufacturing managers to manufacturing), others – such as undertakers and embalmers, for instance – required a more interpretive judgment. In these cases, occupations were linked to the sector that most closely aligned with the functional context of their work (e.g., undertakers were grouped under care, cleaning, and housekeeping due to their provision of personal services). This classification exercise is conceptually a simplification, as many occupations are inherently cross-sectoral and may be found across multiple domains of economic activity. To overcome this, in instances where the FGDs or initial KIIs did not sufficiently cover a given occupation, supplementary KIIs were sought with professionals knowledgeable of the role. This aimed to ensure that each occupation, regardless of its initial sectoral grouping, was adequately explored during the qualitative phase and that sector assignments supported rather than constrained the analysis.

The breakdown of the 96 occupations by sector and ISCO-08 major group is summarized in Table 5 below. This list guided the next phase of the project, which involved a qualitative validation process. FGDs and expert interviews were conducted to assess whether the results align with on-the-ground labor market conditions and to identify any gaps or contextual nuances not captured by quantitative data.

Table 5: Breakdown of preliminary critical occupations by sectoral classification & ISCO-08 major group

Sectoral Classification & ISCO-08 1-digit Group	Number of Occupations
Agriculture (including livestock, forestry and fishing)	**5**
6 - Skilled Agricultural, Forestry and Fishery Workers	5
Care, Cleaning and Housekeeping	**10**
1 - Managers	2
5 - Service and Sales Workers	4
8 - Plant and Machine Operators, and Assemblers	1
9 - Elementary Occupations	3
Construction, Installation, and Assemblers	**6**
2 - Professionals	1
3 - Technicians and Associate Professionals	1
7 - Craft and Related Trades Workers	3
8 - Plant and Machine Operators, and Assemblers	1
Healthcare and Education	**20**
1 - Managers	1
2 - Professionals	13
3 - Technicians and Associate Professionals	4
5 - Service and Sales Workers	2
Manufacturing (including industrial machinery)	**9**
1 - Managers	1
3 - Technicians and Associate Professionals	2
7 - Craft and Related Trades Workers	3
8 - Plant and Machine Operators, and Assemblers	2
9 - Elementary Occupations	1
Restaurants, Customer Service and Hospitality	**20**
4 - Clerical Support Workers	4
5 - Service and Sales Workers	10
8 - Plant and Machine Operators, and Assemblers	3
9 - Elementary Occupations	3
Scientific, Intellectual and Creative Services	**26**
1 - Managers	5
2 - Professionals	13
3 - Technicians and Associate Professionals	6
4 - Clerical Support Workers	2
Total	**96**

Table 6 presents the detailed list of critical occupations as identified in the top-down analysis. Table 21 in the Annex displays the number of indicators available and flagged for each occupation in the list.

Table 6: Top-down list of critical occupations

ISCO-08 CODE	ISCO-08 QUALIFICATION	SECTORAL CLASSIFICATION
2162	Landscape architects	Construction, Installation, and Assemblers
3123	Construction supervisors	
7111	House builders	
7231	Motor vehicle mechanics and repairers	
7232	Aircraft engine mechanics and repairers	
8332	Heavy truck and lorry drivers	
1321	Manufacturing managers	Manufacturing (including industrial machinery)
3115	Mechanical engineering technicians	
3132	Incinerator and water treatment plant operators	
7323	Print finishing and binding workers	
7516	Tobacco preparers and tobacco products makers	
7549	Craft and related workers not elsewhere classified	
8121	Metal processing plant operators	
8211	Mechanical machinery assemblers	
9311	Mining and quarrying laborers	
6122	Poultry producers	Agriculture (including livestock, forestry and fishing)
6129	Animal producers not elsewhere classified	
6130	Mixed crop and animal producers	
6210	Forestry and related workers	
6222	Inland and coastal waters fishery workers	
4323	Transport clerks	Restaurants, Customer Service and Hospitality
4224	Hotel receptionists	
4212	Bookmakers, croupiers and related gaming workers	
4229	Client information workers not elsewhere classified	
5132	Bartenders	
5131	Waiters	
5120	Cooks	
5246	Food service counter attendants	
5211	Stall and market salespersons	
5245	Service station attendants	
5249	Sales workers not elsewhere classified	
5230	Cashiers and ticket clerks	
5111	Travel attendants and travel stewards	
5414	Security guards	
8311	Locomotive engine drivers	
8350	Ships' deck crews and related workers	
8331	Bus and tram drivers	
9412	Kitchen helpers	
9411	Fast food preparers	
9621	Messengers, package deliverers and luggage porters	
1211	Finance managers	Scientific, Intellectual and Creative Services
1212	Human resource managers	
1219	Business services and administration managers not elsewhere classified	
1223	Research and development managers	
1330	Information and communications technology service managers	

2112	Meteorologists	
2114	Geologists and geophysicists	
2611	Lawyers	
2412	Financial and investment advisers	
2413	Financial analysts	
2421	Management and organization analysts	
2433	Technical and medical sales professionals (excluding ICT)	
2431	Advertising and marketing professionals	
2432	Public relations professionals	
2434	Information and communications technology sales professionals	
2529	Database and network professionals not elsewhere classified	
2652	Musicians, singers and composers	
2653	Dancers and choreographers	
3154	Air traffic controllers	
3155	Air traffic safety electronics technicians	
3314	Statistical, mathematical and related associate professionals	
3341	Office supervisors	
3435	Other artistic and cultural associate professionals	
3511	Information and communications technology operations technicians	
4416	Personnel clerks	
4211	Bank tellers and related clerks	
1345	Education managers	
2211	Generalist medical practitioners	
2212	Specialist medical practitioners	
2221	Nursing professionals	
2250	Veterinarians	
2264	Physiotherapists	
2310	University and higher education teachers	
2320	Vocational education teachers	
2330	Secondary education teachers	
2341	Primary school teachers	Healthcare and Education
2342	Early childhood educators	
2352	Special needs teachers	
2351	Education methods specialists	
2359	Teaching professionals not elsewhere classified	
3257	Environmental and occupational health inspectors and associates	
3422	Sports coaches, instructors and officials	
3213	Pharmaceutical technicians and assistants	
3258	Ambulance workers	
5312	Teachers' aides	
5411	Fire-fighters	
1343	Aged care services managers	
1344	Social welfare managers	
5322	Home-based personal care workers	Care, Cleaning and Housekeeping
5152	Domestic housekeepers	
5163	Undertakers and embalmers	
5413	Prison guards	
8157	Laundry machine operators	

9129	Other cleaning workers
9611	Garbage and recycling collectors
9622	Odd job persons

3.2 Bottom-Up: Qualitative Findings

The bottom-up analysis combined employer perspectives with consultations held with policymakers and institutional stakeholders to provide a comprehensive view of Spain's current labor market dynamics and critical occupational shortages. While the sectoral sub-sections that follow present detailed findings from employer-level discussions, the insights gathered from public institutions, including SEPE, the Bank of Spain, and various ministries, offered a broader national perspective on the structural and cyclical drivers of labor scarcity.

Institutional stakeholders consistently reported that labor shortages are widespread across most economic sectors in the post-pandemic recovery period, although the underlying causes vary. A dual shortage pattern is observed: on one end, low-skilled roles in agriculture, construction, hospitality, transport, and cleaning face persistent vacancies, often due to unattractive working conditions and a lack of generational replacement; on the other end, mid-skill and high-skilled technical profiles, particularly in Information and Communications Technology (ICT), engineering, and emerging industries such as renewables, are becoming increasingly difficult to source, largely due to insufficient specialized training and rapid sectoral expansion. In particular, stakeholder insights highlighted the following sectors as currently facing the most significant labor shortages in Spain:

- Agriculture was consistently mentioned as a sector with labor scarcity, particularly in rural areas and during agricultural campaigns. This is linked to a lack of generational replacement and a preference among youth for urban areas.
- Construction sector was noted for its labor deficits, especially in qualified trades such as bricklayers, electricians, and plumbers. SEPE currently estimates a deficit of up to 700,000 people in this sector, citing a lack of generational replacement and low incorporation of young people and women. European funds are seen as a key factor driving demand in this sector.
- Hospitality and Tourism sector faces difficulties covering positions, particularly waiters, floor staff, cooks, and cleaning staff. This sector experiences high turnover, and while traditionally seasonal, the high season is becoming year-round in some regions. According to SEPE, almost 64% of companies in this sector report hiring problems.
- Transport and Logistics sector exhibits a scarcity of professional drivers (trucks, buses), delivery staff, and qualified warehouse personnel. This is linked to the growth of e-commerce and distribution.
- The Technology and Information Technology (IT) sector, including communications, programmers, analysts, data specialists, cybersecurity, and software development, also faces shortages. This includes demands for technical staff, engineering, and specialized profiles in areas like renewables, robotics, and automotive.

- **Healthcare** is mentioned to be facing difficult-to-cover vacancies due to an aging workforce and increased retirements, especially for experienced and highly qualified staff like nurses, technicians, and particularly caregivers.

These challenges are compounded by administrative bottlenecks, limited geographic mobility among the workforce, and a disconnect between formal qualifications and real-world job readiness. Institutional stakeholders emphasized that structural barriers limit Spain's ability to address these shortages domestically. These include poor alignment between training systems and labor market needs, unattractive employment conditions in many sectors, and low mobility among job seekers. Demographic shifts, particularly an aging population and low birth rates, are further contributing to the erosion of the workforce, while a significant share of the unemployed face age- or skills-related barriers to re-entry. In light of these constraints, stakeholders broadly recognized that it would be difficult to meet Spain's evolving labor needs without the support of migrant labor.

Additional challenges that were frequently brought up during consultations stem from the predominance of MSMEs in Spain's labor market. MSMEs, which are defined as companies with less than 250 employees, account for 99% of all registered companies in the country and generate around 61% of national employment as of April 2025.[50] This enterprise structure introduces important considerations for workforce planning and recruitment. Stakeholders argued that, compared to larger firms, MSMEs often operate with leaner organizational structures and limited human resource capacity, which can restrict their ability to navigate complex administrative procedures, such as those involved in hiring foreign workers. Additionally, these firms tend to demand multi-skilled, adaptable workers who can perform a range of tasks, rather than narrowly specialized profiles. This preference for "360-degree" profiles in employees reflects the need for operational flexibility in smaller enterprises, and it can pose challenges for labor matching when available training systems are overly segmented or when migration pathways are not designed to accommodate such profiles.

The remainder of this section presents the findings from the qualitative component of the COL methodology. Specifically, section 3.2.1 presents the sector-specific results of the consultations with employers, including validation of the preliminary COL, additional roles identified through the data analysis, skills and competency gaps, employer perspectives and perceived bottlenecks in hiring migrant workers, and an indicative profile of in-demand workers.

3.2.1 Sectoral Validation of Labor Market Shortages

Construction, Installation, and Assemblers

Consultations with a diverse group of employers operating across various segments of the construction and installation ecosystem led to the validation of the COL and additional critical aspects of the Spanish labor market, as well as opportunities for the integration of migrant workers. Participants included both large national firms and small to mid-sized companies involved in infrastructure development, residential construction, transport logistics, and mechanical and electrical maintenance. Their roles ranged from HR representatives and hiring managers to senior technical staff and company executives, offering multifaceted perspectives on recruitment challenges, skills gaps, and labor needs within the sector.

Table 7: Consultation participants: Construction, installation, and assemblers

[50] Ministerio de Industria y Turismo. (2025). Cifras PYME. Datos Abril 2025. Available: https://ipyme.org/Publicaciones/Cifras%20PYME/CifrasPyme_abril_2025.pdf

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Regional logistics and freight transport company based in Extremadura.	Company manager and head of the administration department	Calera de León	Extremadura	Micro
FGD	Madrid-based retailer specializing in motorcycle parts and accessories.	Partner and executive	Madrid	Madrid	Small
FGD	Spanish multinational in infrastructure, engineering, and renewable energy services.	HR technician and head of the Substation Development Department	Madrid	Madrid	Large
FGD	Small Andalusian firm involved in aircraft maintenance and components.	Manager, director, head of administration, and chief of mechanics	Córdoba	Andalusia	Small
FGD	Mechanical workshop in La Rioja focused on vehicle repair and maintenance	Manager and executive	La Rioja	La Rioja	Micro
KII	A company specializing in full-scale renovations and new construction projects from the ground up, with particular expertise in residential buildings.	Senior construction worker (official first-class), company manager, and head of hiring.	Sevilla	Andalusia	Small
KII	Company dedicated to residential building construction	Site Manager	National	National	Medium

Validation of Preliminary Critical Occupations

Employer feedback largely confirmed the presence of labor shortages in occupations related to construction, heavy transport, mechanics, and specialized electrical work. Across both the FGD and KIIs, participants validated many of the preliminary occupations flagged in the top-down analysis, such as supervisors, builders, and mechanical repairers. In particular, roles like skilled site operators, heavy truck drivers, and specialized mechanics were emphasized as difficult to fill. Electrical installation supervisors – especially those working on high-voltage systems – were identified as nearly impossible to recruit, due to a gap between vocational training levels and the advanced expertise required. Conversely, some skepticism was expressed regarding the inclusion of landscape architects, which one interviewee noted are currently available in sufficient supply, but another mentioned that in their experience, this is indeed a hard-to-fill occupation.

Additional Occupations Raised as Critical

Participants identified a range of additional roles they consider critical, highlighting gaps in the quantitative list which reflect sector-specific realities and evolving needs. Some occupations not captured by the top-down methodology were identified and emphasized in the qualitative consultations, including:

- High-tension line installers – physically demanding roles that are almost exclusively filled by foreign workers. The corresponding 4-digit occupation is 7413: Electric Line Installers and Repairers.
- Quality control personnel in aeronautics and transport – often require firm-specific internal training. The corresponding 4-digit occupation is 7543: Product Graders and Testers.

- Crane operators – cited as increasingly difficult to recruit despite being essential to a wide range of projects. The corresponding occupation is 8343: Crane, Hoist and Related Plant Operators.
- General and traditional construction trades – positions that participants noted are increasingly hard to fill, even for basic site operations. Corresponding occupations include:
    - 7411: Building and related electricians
    - 7123: Plasterers
    - 7115: Carpenters and joiners
    - 7126: Plumbers and pipe fitters
    - 7112: Bricklayers and related workers
    - 7122: Floor layers and tile setters
    - 7124: Insulation workers
- Support roles such as chemical toilet cleaners on worksites – these are reportedly filled exclusively by migrants. All cleaning occupations are covered under the Care, Cleaning and Housekeeping sectoral group, discussed below.

The suggested additions point to different categories of shortage arising due to: (i) technical specialization in new or evolving fields (e.g., aviation and hydraulics), (ii) traditional trades facing generational attrition, and (iii) low attractiveness of roles with minimal national labor supply.

Skills and Competency Gaps

A mismatch between technical training and real-world industry expectations, alongside widespread soft skill deficiencies, was identified as a key barrier to workforce adequacy in the sector. Participants consistently reported that formal vocational education does not align with on-the-job expectations. Specific technical gaps include:

- Inadequate training in light aviation mechanics, retro excavator repair, and mechatronics (combining mechanical and electronic knowledge).
- Weak practical grounding among vocational training graduates, particularly for specialized roles like electrical test supervisors.
- Growing demand for brand-specific technical knowledge (e.g., lithium batteries, digital tools), which companies often have to cover through internal training.

Soft skills were identified as an equally pressing issue. Employers lamented a lack of motivation, commitment, and communication skills among many candidates. Workers were seen as reluctant to acknowledge errors or adapt to changing technical requirements. There was also a perceived generational shift in work ethic, with younger workers described as less willing to engage in physically demanding or flexible roles. The aviation sector also flagged technical English proficiency as a barrier to effective work.

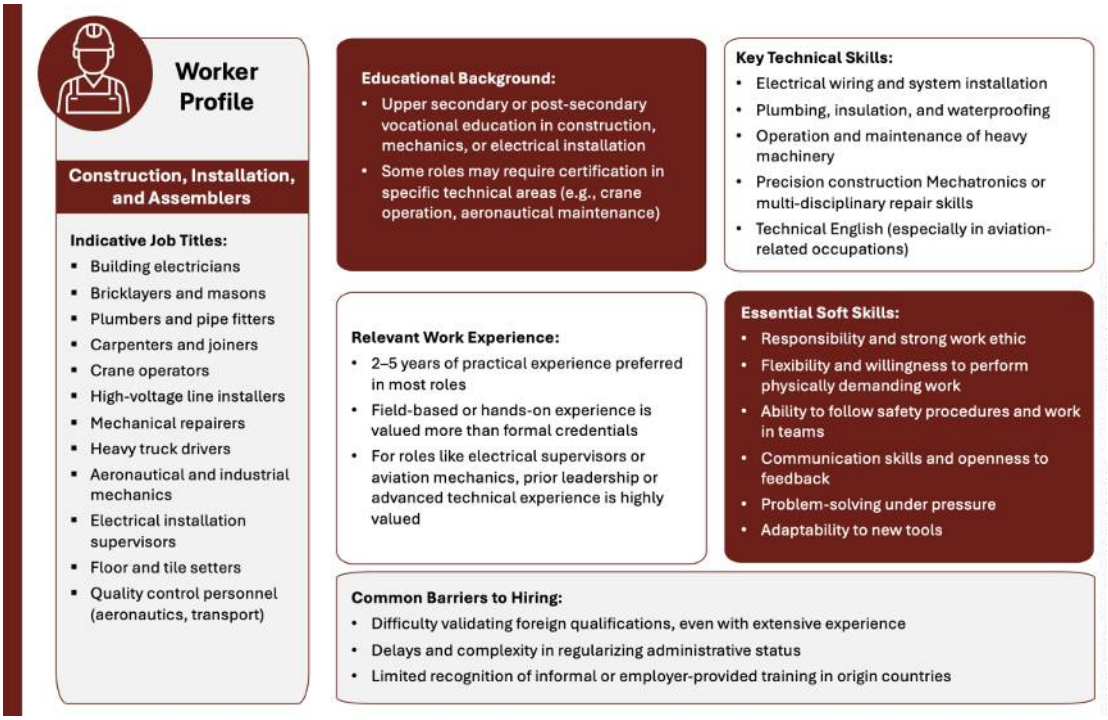
Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

Employers expressed strong openness to hiring migrant workers and emphasized their essential role in maintaining productivity in difficult-to-fill roles, though several institutional barriers remain. Migrant workers were described as playing a central role in roles persistently rejected by national workers, such as high-voltage line installation, international driving, or on-site cleaning. Employers reported successful experiences with migrants from Latin America (e.g., Venezuela, Uruguay, Colombia, Dominican Republic),

Eastern Europe (e.g., Romania, Poland), and North Africa. In several cases, migrant workers progressed from entry-level to skilled positions over time, particularly when they demonstrated a strong work ethic and learning capacity.

At the same time, employers noted important administrative and regulatory hurdles. These include delays in obtaining appointments at immigration offices and challenges in recognizing foreign qualifications. Some participants expressed frustration that Latin American workers with proven experience and knowledge were required to revalidate their credentials from scratch in Spain. Despite these barriers, there was widespread support for regulated labor mobility channels and openness to circular migration schemes that ensure the availability of motivated and semi- or fully qualified personnel. Employers emphasized that migrant workers should not be confined to undesirable jobs alone but should be integrated at all levels of the occupational structure.

Indicative Profile of In-Demand Workers[51]



Employer Insights on Regional Heterogeneity of the Labor Market

Although labor shortages in construction and related occupations were reported across Spain, stakeholder perspectives highlighted certain regional nuances in workforce availability and training infrastructure. Participants operated in a range of locations – from rural Extremadura and La Rioja to urban centers like Madrid and Córdoba – and several drew comparisons between their local labor dynamics and those in other parts of the country. For instance, a company manager in a small town in Extremadura contrasted the more recent gradual arrival of migrant workers in rural areas with the longer-established diversity of larger cities like Barcelona, where demographic change was described as more advanced. Others pointed to the influence of historical labor migration patterns and localized skills development: training for motorcycle

[51] The infographics describing the indicative profile of in-demand workers for each sectoral group are based on the qualitative bottom-up findings and are not informed by the top-down analysis or additional quantitative data sources.

mechanics was noted to be concentrated in Catalonia and Madrid, while particular construction occupations, such as builders, have traditionally been associated with regions such as Toledo or La Sagra.

Some participants also described region-specific workforce challenges linked to immigration and sectoral demand. For example, stakeholders with operations in Huelva highlighted the concentration of foreign labor, especially among migrant workers from Romania and Morocco, in agricultural work such as strawberry picking, underscoring how lower labor availability in the construction sector may also be shaped by local competition from other industries. More generally, there is a general perception that companies operating in larger urban centers more easily integrant migrant workforce into their teams, given a higher concentration of immigrants in these urban centers when compared to rural areas of Spain. While no single region was flagged as having significantly better or worse conditions for recruiting construction workers, the consultations revealed that workforce composition and the visibility of migrant workers vary across Spain's territory.

Manufacturing (including industrial machinery)

Stakeholder consultations across manufacturing firms and sector associations revealed widespread recruitment difficulties and emerging skill gaps across both traditional and modern production activities. Participants represented a diverse array of sub-sectors, including filtration systems, metal carpentry, furniture and upholstery, and mineral raw material extraction – and included both medium and small businesses, unions and industry associations. The findings highlight significant occupational shortages, a growing mismatch between training and job requirements, and employer attitudes towards hiring migrant workers.

Table 8: Consultation participants: Manufacturing

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Spanish company specializing in the manufacture and installation of awnings, upholstery, and textile sun protection solutions.	Manager	Badajoz	Extremadura	Micro
FGD	Furniture company in Spain that designs and produces custom-made furniture for homes and businesses.	Member of Management	Jaén	Andalusia	Small
FGD	One of Spain's largest trade unions, defending workers' rights across all sectors.	Sectoral Head & Coordinator for Industry & Engineering	National	National	Union
FGD	Spanish company with strong international presence that designs, manufactures, and distributes components and accessories for furniture, carpentry, and DIY sectors.	HR Director	Valencia	Valencia	Medium
KII	Spanish company specializing in the design and manufacturing of filtration systems for industrial and agricultural applications.	Manager	Sevilla	Andalusia	Mediana
KII	ANEFA represents companies involved in the extraction and processing of aggregates & PRIMIGEA	Technical Director of ANEFA and	National	National	Industry Association

	is an association of companies dedicated to the production of industrial minerals and raw materials for various industries.	member of PRIMIGEA.			

Validation of Preliminary Critical Occupations

Some of the occupations included in the preliminary COL were validated by employers and industry representatives as hard to fill, particularly roles linked to production machinery, installation, and metal processing. Specific occupations from the preliminary COL that received consistent validation throughout consultations included: machinery assemblers, metal processing plant operators and craft and related workers in general. Additionally, through spontaneous mentions of this occupation by stakeholders during consultations, manufacturing employees also validated heavy truck and lorry drivers (occupation code: 8332) as hard to fill, which was part of the preliminary list in the Construction sector. This additional piece of evidence was also considered as strengthening the relevance of this occupation, which is part of the final COL. Conversely, higher-level or supervisory positions such as manufacturing managers, as well as mechanical engineering technicians were not widely seen as difficult to fill, with participants noting an adequate supply of qualified professionals for these roles.

Additional Occupations Raised as Critical

Employers and industry stakeholders in the manufacturing sector identified a large number of critical occupations not included in the preliminary COL but seen as increasingly difficult to fill in practice. These suggested additions point to three distinct types of occupational shortages: (i) traditional manufacturing roles facing long-term generational decline, (ii) digitally evolving occupations where education has not caught up with demand, and (iii) regionally concentrated trades, particularly in textiles, footwear, and extractives, with weak training pipelines and limited geographic mobility. The following occupations were highlighted across FGDs and KIIs:

- Design and digital manufacturing specialists – employers reported increasing difficulty in sourcing professionals who combine design expertise with emerging digital tools, especially in small firms where versatility is essential. The corresponding occupations include 2166: Graphic and multimedia designers (particularly 2166.1: 3D modeler and 2166.9: Graphic designer), as well as 3118: Draughtspersons, particularly those experienced in 3D printing and design adaptation (3118.1: 3D printing technicians). These profiles are in growing demand due to the expansion of digital design and additive manufacturing technologies.

- Cybersecurity technicians – Some participants also noted growing needs for cybersecurity support in digitalized manufacturing environments. While demand remains concentrated in larger firms, participants argued that SMEs are beginning to recognize these roles as critical. Corresponding occupation: 3512: ICT user support technicians (notably 3512.3: Cybersecurity technicians).

- Skilled metalworking and welding trades – multiple stakeholders highlighted persistent shortages in key technical roles essential to industrial operations. This includes occupation 7212: Welders and flamecutters, cited across both FGDs and interviews as hard-to-fill due to physically demanding work conditions and a decline in training supply, as well as 7223: Metal working machine tool setters and operators, cited in FGDs as hard-to-fill. Under metal working operators, employees reported particular challenges in filling the roles of CNC machine operators, lathe operators, and milling machine operators (sub-occupations 7223.4; 7223.4.4 and 7223.4.6); these roles require significant technical dexterity and are critical for maintaining production continuity.

- Machinery repairers for agriculture and industry – operators and repair technicians for heavy and mobile machinery are needed across both manufacturing and mining sub-sectors. These positions often rely on informal or on-the-job training, limiting external recruitment. The corresponding occupation is 7233: Agricultural and industrial machinery mechanics and repairers.
- Electricians – while also flagged under construction, employers in manufacturing specifically mentioned shortages of industrial and facility electricians, including those capable of integrating electrical systems into production lines. The corresponding occupation is 7411: Building and related electricians.
- Textile, footwear, and leather goods workers – persistent recruitment difficulties were reported across multiple segments of traditional manufacturing. Employers highlighted an aging workforce and declining interest among younger workers, particularly in regionally concentrated hubs. This includes occupation 7533: Sewing, embroidery and related workers (especially 7533.5: Sewing machinists), occupation 8152: Weaving and knitting machine operators, and 8156: Shoemaking and related machine operators, which includes footwear and leather goods workers.
- Excavator and heavy plant operators in mining – stakeholders from the extractive industries stressed the need for operators of specialized mobile machinery such as loaders and haul trucks, particularly in quarries and open-pit mining. The corresponding occupation is 8342: Earthmoving and related plant operators, specifically 8342.3: Excavator operator, and 8342.10: Surface mine plant operator.
- Forklift operators – although widely needed, companies reported that training and certification requirements make this occupation difficult to fill, especially in smaller firms that must finance in-house training. The corresponding occupation is 8344: Lifting truck operators, particularly 8344.1: Forklift operators.

Skills and Competency Gaps

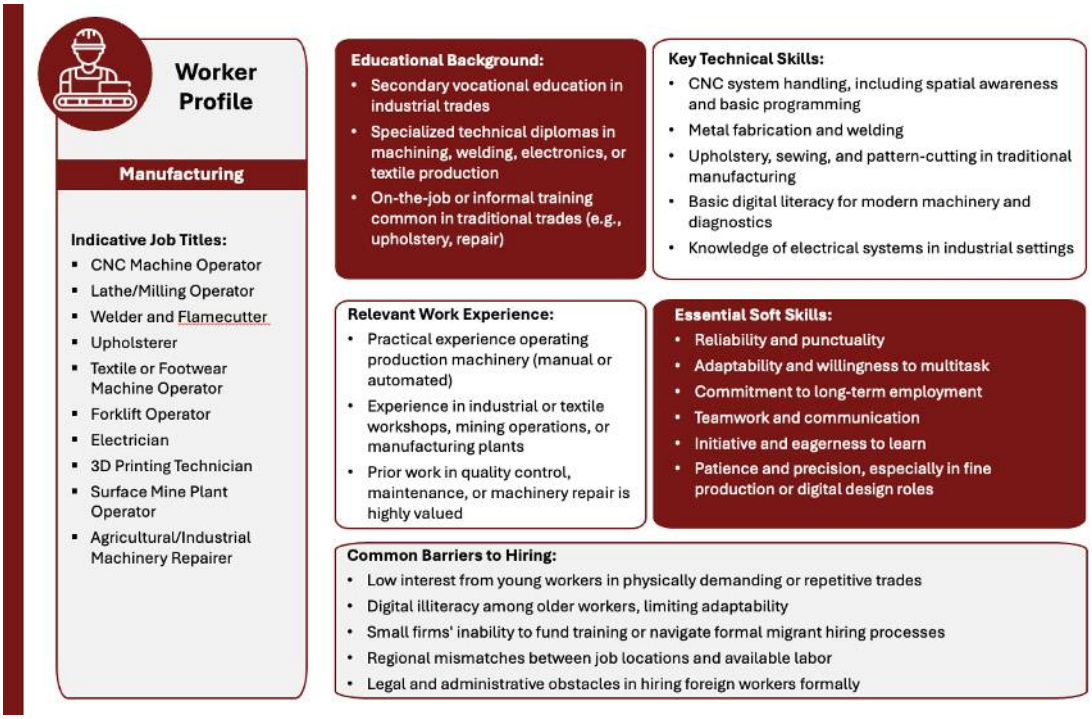
Technical skills gaps in the manufacturing sector reflect both traditional trade shortages and emerging technological demands. Employers reported that both older and younger workers often lack the skills needed to operate modern machinery such as CNC systems, which require mathematical competence, spatial awareness, and adaptability. At the same time, traditional manual skills, such as upholstery, welding, and metalwork, are also in decline due to low training uptake and weak generational replacement. Soft skills deficiencies were equally emphasized. Employers underscored the need for commitment, reliability, and willingness to learn, particularly in small firms where workers are expected to perform a wide range of tasks. Among older workers, digital illiteracy was seen as a barrier to operating advanced equipment, while among younger recruits, a lack of practical experience and low motivation were frequently cited concerns.

Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

Employers expressed broad openness to hiring migrant workers, especially in occupations with acute shortages or low local appeal. Stakeholders reported that some companies, especially larger or more internationally oriented firms, already employ diverse teams with staff from Latin America, Eastern Europe, and North Africa. Migrants were noted to be particularly prevalent in low-wage, high-turnover roles such as production line operators and plant laborers. However, smaller firms often lack the resources to navigate legal procedures required for formal recruitment. Similarly to discussions in other sectors, several participants cited Spain's immigration law and procedural bottlenecks as major barriers, particularly for SMEs unable to manage complex documentation or afford delays in hiring. Others pointed to cultural and language adaptation challenges in managing diverse teams, especially in smaller and more localized

workplaces. Nonetheless, employers consistently acknowledged the value of motivated, Spanish-speaking migrant workers and highlighted Latin America as a promising source of talent for both manual and technical roles in manufacturing.

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

Stakeholders emphasized that recruitment challenges in the manufacturing sector are highly sensitive to regional and local factors, particularly the geographic distribution of industrial activity and the availability of training infrastructure. In smaller and more isolated towns, employers reported significant difficulties in sourcing qualified labor. For instance, a business owner from a village in Badajoz described an acute lack of skilled workers for roles such as awning installation and upholstery. The absence of relevant local training institutions and the broad skill set required by small, multifunctional firms were cited as key constraints. In contrast, participants from towns with more established industrial ecosystems reported fewer recruitment challenges. In Mancha Real, Jaén, for example, the presence of a specialized industrial estate dedicated to wood manufacturing, combined with vocational training modules in carpentry, was seen as facilitating a more stable pipeline of workers, even if newly trained workers often require additional hands-on experience.

Agriculture (including forestry and fishing)

The analysis for the agriculture, livestock, forestry, and fishing sector draws insights from a diverse range of stakeholders representing both primary producers and sector-wide institutions. Participants included organic farmers, cooperative leaders, and forestry and fisheries representatives, as well as labor and rural development advocates. This mix of perspectives, from national associations to local producers, enabled a comprehensive understanding of workforce dynamics, skills shortages, and recruitment challenges across the primary sector's varied subdomains.

Table 9: Consultation participants: Agriculture, livestock, forestry, and fishing

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Size
FGD	National platform that promotes innovation in Spain's fishing and aquaculture sectors.	Technical Secretary	National	National	Micro
FGD	National association representing forestry service companies across Spain.	Manager	National	National	Micro
FGD & KII	Local organic farmer specializing in olive groves and vineyards, who also manages a marketing agency.	CEO/Company Manager	Extremadura	Extremadura	Micro
FGD	Federation advocating for the rights and development of rural women in Spain.	Manager	Madrid	Madrid	Small
FGD	Regional agricultural cooperative supporting local farmers in southern Extremadura.	Governing Board Member	Campiña Sur	Extremadura	Micro
FGD	One of Spain's largest trade unions, defending workers' rights across all sectors.	Head of the Industry Department	National	National	Union

Validation of Preliminary Critical Occupations

Stakeholders broadly validated the entire preliminary list of critical occupations for the agriculture and broader primary sector. Across the focus group and KIIs, participants expressed agreement with the occupational profiles identified through the top-down analysis. Roles such as agricultural operators, forestry operators, livestock workers, and mariners were consistently described as difficult to fill, aligning with those flagged in the preliminary list. Additionally, while no occupations were explicitly contested, one interviewee proposed adding skilled workers in ecological and sustainable agriculture as an emerging profile of relevance. Overall, stakeholders affirmed the accuracy of the existing list while emphasizing the need for occupational detail that reflects sectoral diversity.

Additional Occupations Raised as Critical

A few occupations were identified as critical by participants but were not reflected in the quantitative shortlist, pointing towards sector-specific gaps in labor market data. One of the quantitative data sources (the Lightcast dataset) did not include data for occupations in Agriculture, and thus the qualitative consultations in this sector play an important role in identifying additional critical occupations. Among the most frequently mentioned were:

- Forestry machine operators, especially those skilled in operating complex equipment like harvesters and processors. The corresponding occupation is 9215: Forestry Laborers.
- Skilled agricultural labor for pruning, phytosanitary treatment, and machinery handling – particularly for traditional crops such as olives and vineyards. This falls under occupation 3142: Agricultural Technicians.

- Harvest workers for labor-intensive campaigns like table olives and garlic, which require both volume and care. This falls under occupation 9211: Crop Farm Laborers and also highlights the importance of seasonal work during the most labor-intensive campaigns.
- Fishmongers with expertise in fish preparation, cutting, and species recognition. The corresponding occupation ais 7511: Butchers, fishmongers and related food preparers (particularly 7511.2: Fish Preparation Operators).
- Boat crew members, skippers and captains, who require a combination of experience and theoretical qualifications, which are increasingly difficult to source domestically. This includes the previously identified occupation 6222: Inland and coastal waters fishery workers, but also occupation 6223: Deep-sea fishery workers.

Skills and Competency Gaps

A widespread gap in both technical and soft skills was reported across all primary sectors, often requiring employers to invest heavily in internal training. In the agriculture sector, a lack of training in phytosanitary management, pruning techniques, and machinery operation was commonly cited. Participants noted that even when workers are willing, they often arrive with no foundational skills and must be trained from scratch. In the livestock sector, the need for flexible schedules and physical endurance discourages many prospective workers. In the fishing sector, training received when acquiring a fishing licensing is extremely theoretical, having led to younger workers beginning to work without practical experience, undermining their performance in key roles such as skipper or boatswain. Even in aquaculture, where training is more structured, skills in automation, diving, and remote operations remain underdeveloped.

Beyond technical deficiencies, participants emphasized soft skill challenges as a significant constraint to workforce reliability. Many workers were described as lacking motivation or commitment, with absenteeism noted as a recurring issue, especially among younger employees. In some cases, workers left positions shortly after receiving training, resulting in productivity losses and undermining the return on employer investment in capacity-building. A lack of territorial attachment or long-term career interest was also highlighted, especially among seasonal workers with no ties to the local community or sector. Employers observed that even when tasks are learned, many workers lack initiative or teamwork, focusing only on individual performance rather than collective outcomes.

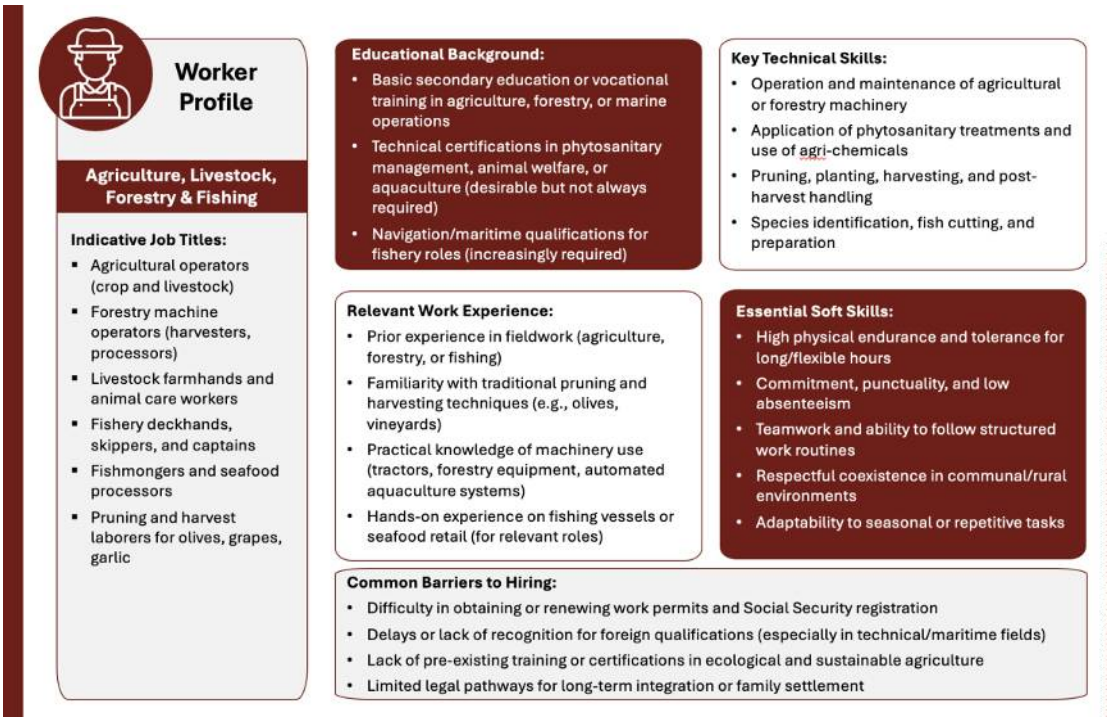
Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

Employers across agriculture, forestry, and fishing rely heavily on migrant workers to address labor shortages yet continue to face bureaucratic and regulatory challenges that hinder formal hiring. Migrant labor is considered essential, especially in harvesting, fishing crews, and operational forestry roles. In agriculture and forestry, workers from Morocco, Romania, and sub-Saharan Africa are frequently employed. In fishing, Indonesian, Filipino, Senegalese, and Moroccan nationals are commonly recruited, particularly for demanding onboard roles. According to stakeholder feedback, while Latin American workers are less commonly found in this sector, some positive experiences were shared, particularly with Peruvians and in fish retail roles. While foreign workers were frequently praised for their responsibility, adaptability, and respectful attitude, particularly those from Southeast Asia, some employers noted coexistence challenges on fishing vessels or in shared accommodations, especially when workers came from diverse cultural backgrounds and had not previously worked together.

Employers identified multiple barriers to hiring migrants in a legal and efficient manner. These include the complexity of documentation, difficulty registering workers with Social Security, and delays in validating foreign qualifications. Although recent bilateral agreements have addressed some of these issues in the

fishing sector, similar frameworks are lacking for Latin American migrants. Concerns were also raised about migrants brought in through official circular migration schemes (such as under the GECCO order) who do not always return as agreed. Despite these challenges, employers expressed strong support for facilitating the legal integration of migrant workers and emphasized the importance of enabling them to settle permanently in rural areas, where depopulation and labor scarcity are severe.

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

Stakeholder perspectives revealed that labor shortages and recruitment dynamics in the agriculture, livestock, and fisheries sectors vary across Spain's regions. This variation is mostly shaped by differences in crop types, migration patterns, and local socioeconomic contexts. Employers and institutional representatives frequently referenced their specific territories when describing labor challenges, underscoring that no uniform experience exists across the country:

- In Extremadura, for example, an organic farmer based in Tierra de Barros described persistent difficulties in attracting Spanish nationals for fieldwork, with recruitment increasingly dependent on Moroccan and Romanian workers. Similar dynamics were reported by a cooperative in Campiña Sur, which emphasized the localized challenge of sourcing livestock workers and administrative staff. While young Latin American men have begun arriving in the area, often as family members of caregivers, long-term settlement remains limited.
- In Castilla-La Mancha, the manager of a rural women's rights federation noted widespread reliance on seasonal migrant labor – particularly for olive, grape, and garlic harvests – and highlighted the increasing presence of settled Central European farm owners, especially from Romania. They also pointed to challenges in hiring qualified technical staff for support organizations, suggesting regional gaps not only in manual labor but also in agricultural service provision. The contrast with Extremadura's rice farming landscape further illustrates the diversity of labor realities within the

sector.

- In the fishing and aquaculture domain, the situation in **Galicia** was noted as particularly acute. Stakeholders observed a lack of interest among young Galicians in working at sea, coupled with a growing share of coastal village populations composed of settled migrants from Senegal, Cabo Verde, and other parts of Africa. Gendered patterns were also noted, with women more frequently working aboard vessels in the Mediterranean than in other coastal areas. These findings point to significant territorial variation in both labor supply and the socio-demographic composition of the workforce across Spain's primary sector.

Restaurants, Customer Service and Hospitality

The analysis for the restaurants, customer service, and hospitality sector is based on input from a wide range of stakeholders operating across the accommodation, food service, and urban mobility sub-sectors. Participants included human resources directors and managers from restaurants, hotel chains, and catering companies, as well as representatives from a national hotel industry association and the municipal transport company of Valencia. This mix of local employers, sector associations, and public service providers allowed for a well-rounded examination of recruitment difficulties, occupational profiles in demand, and emerging trends in labor supply and workforce expectations across both urban and tourism-driven environments.

Table 10: Consultation participants: Restaurants, customer service, and hospitality

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Spanish fast-food restaurant offering a menu focused on pizzas, burgers, and casual dining options.	HR Manager	Sevilla	Andalusia	Small
FGD	Service station operated by Repsol, one of Spain's leading energy companies, providing fuel, car services, and convenience products.	Manager	Badajoz	Extremadura	Micro
FGD	The national trade association representing hotels and tourist accommodations in Spain, advocating for the sector's interests at the national and European levels.	Head of the Training and Research Department	Guadalajara	Castilla La Mancha	Small
FGD	Hospitality and catering company in Spain specializing in innovative culinary experiences and event services.	HR Director	Vitoria	País Vasco	Medium
FGD	Company offering furnished tent accommodations and premium camping experiences across various natural locations in Spain.	HR Technician	National	National	Large
FGD	Hotel chain in Spain operated by the ONCE social group, known for its commitment to accessibility, sustainability, and inclusive employment practices.	Subdirector	Andalusia	Andalusia	Large

KII	The Municipal Transport Company (EMT) of Valencia is the city's urban bus service. The interviewee is the person responsible for the Urban Transport Lines Coordination Center.	Coordinator and Chief Inspector	Valencia	Comunidad Valenciana	Public Adminis-tration
KII	The Spanish Confederation of Hotels and Tourist Accommodations (CEHAT) is the national business organization representing the hotel industry. CEHAT represents the entire Spanish accommodation sector, including independent hotels, hotel chains, and tourist apartments.	Head of the Training and Research Department	Madrid	Madrid	Industry Associa-tion

Validation of Preliminary Critical Occupations

Employer consultations partially validated the roles flagged in the top-down analysis, with strong support expressed for a select group of occupations in the hospitality and customer service sector. Cooks, receptionists, and waiters were repeatedly cited as hard-to-recruit positions requiring both technical and interpersonal skills, particularly in restaurants and hotels. Participants emphasized that while these jobs are often viewed as entry-level, they require significant training, experience, or service orientation to perform well, and agreed that these should be included in a final list of critical occupations in Spain. Regarding the occupations of kitchen assistants, messengers, and bus and tram drivers, employers noted that high turnover and low retention are the main challenges related to these positions, which are not always difficult to source, but rather challenging to retain. Finally, regarding the occupation of security guards, stakeholders argued that these tend to be outsourced to specific security companies, and employers in the hospitality sector are not aware of shortages. Overall, the qualitative evidence supported the inclusion of a small number of key roles from the preliminary list, while casting doubt or yielding limited information on several others.

Additional Occupations Raised as Critical

In addition to the roles identified in the top-down list, participants raised other occupations that can pose recruitment challenges across different sub-sectors of hospitality and customer service. These include:

- Cleaners, particularly in tourist accommodation settings. This occupation was also raised as critical in the Care, Cleaning and Housekeeping group, reflecting the sector's reliance on visible, customer-facing cleaning personnel and the challenges of recruiting for these roles. This corresponds to occupation 9112: Cleaners and helpers in offices, hotels and other establishments, which is part of the final COL under the Care sectoral group.
- Maintenance staff, particularly for roles that demand diverse technical skills in carpentry, gardening, and electrical work. This corresponds to occupation 9622: Odd job persons, which is part of the preliminary and final COL, but associated with the Care, Cleaning and Housekeeping sectoral group.
- Restaurant managers (occupation 1412), including kitchen supervisors and department heads, were highlighted as key to team coordination and service quality. These roles require not only technical experience but also strong soft skills in leadership and people management, which participants noted are increasingly hard to find.

- Car, taxi and van drivers (occupation 8322), raised particularly by a stakeholder in the transportation sector, arguing that the occupation is being increasingly filled by migrant workforce, potentially signaling a diminished pool of available local workforce.

Skills and Competency Gaps

Technical skills shortages were raised for several occupations, particularly cooks, kitchen managers, receptionists, and maintenance workers. Employers cited difficulty finding individuals who could operate in large kitchens, use sector-specific IT tools, or manage multi-disciplinary repair tasks. Language proficiency and computer skills were described as essential for receptionists but often absent even among university-trained candidates. In tourist accommodations, maintenance staff were expected to handle a wide range of tasks – from carpentry and gardening to electrical work – yet few candidates possessed this versatility. Vocational education programs were widely seen as inadequate in preparing candidates for real-world demands, and these gaps have led to a growing reliance on on-the-job training and internal upskilling strategies, especially among employers struggling to fill roles in peripheral or high-turnover locations.

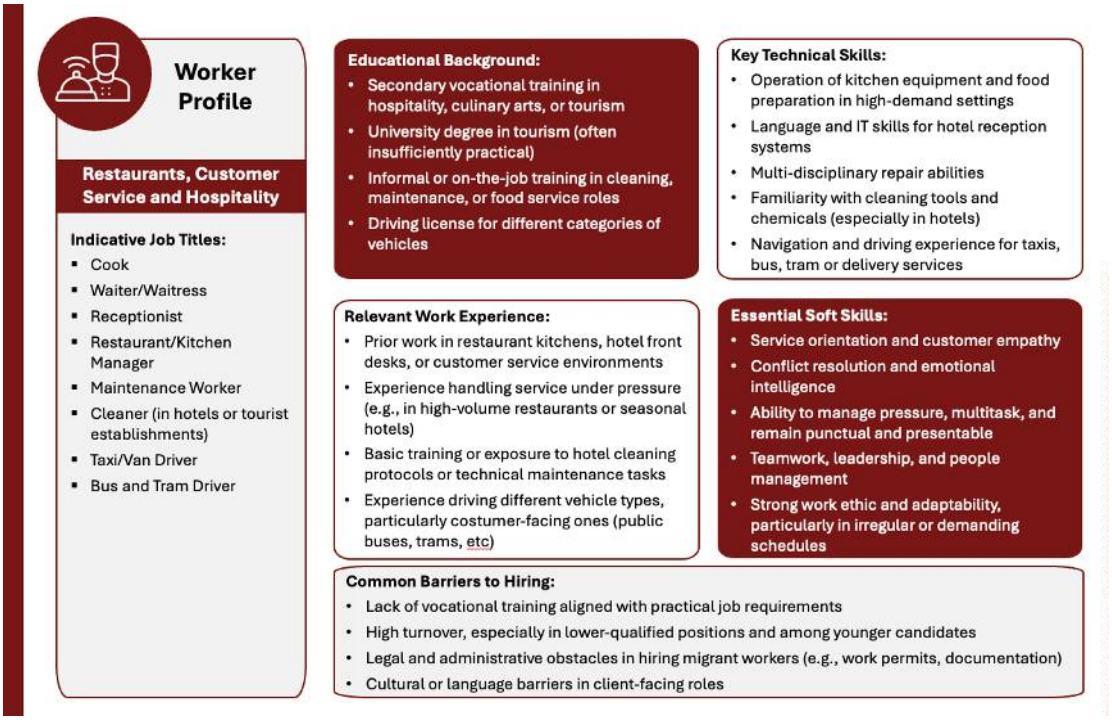
Soft skills and professional demeanor were highlighted as critical yet frequently missing, especially among younger applicants. Key deficits included people management, emotional intelligence, the ability to handle pressure, and a genuine service-oriented attitude – traits that were particularly important for roles like department heads, waiters, and receptionists. Several employers noted that candidates often lacked the "vocation" or passion required to work in hospitality, and some explicitly observed a generational shift in attitudes toward responsibility and client service. While older workers were described as more committed, younger applicants were perceived as prioritizing work-life balance, resisting weekend or holiday shifts, and often approaching these jobs as temporary solutions. Across both large and small employers, participants reported difficulty finding candidates who combined formal training with the right attitude, particularly for public-facing roles.

Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

Employers expressed strong openness to hiring migrant workers and recognized their growing role in sustaining the sector. Companies reported significant shares of their workforce coming from Latin America, and many of these workers were described as motivated, adaptable, and capable of fulfilling demanding roles in kitchens, customer service, and maintenance. Employers also highlighted successful collaborations with NGOs and associations to hire refugees or individuals facing documentation barriers, such as through Sartu.[52] Nonetheless, several institutional barriers were reported. Chief among these were challenges linked to work permits and immigration paperwork, which limit the timely recruitment of migrant candidates. Employers also pointed to issues with credential recognition and adaptation, including language barriers and cultural expectations. Suggested improvements centered on structured migration programs that combine legal residency pathways with targeted training and integration support.

[52] Sartu is a network composed of non-profit associations and non-profit social initiative cooperatives operating in the Basque Country and working in the fields of social services and employment. Its core mission is to combat marginalization and social exclusion. More information: https://www.sartu.org/

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

Employers emphasized that recruitment challenges can vary significantly by region, influenced by factors such as seasonality, local industry structures, and competition for labor. For instance, while urban areas like Madrid offer a broader pool of candidates, smaller cities with strong industrial bases – such as Vitoria-Gasteiz, for instance – struggle to attract workers into hospitality roles due to better employment options in sectors like manufacturing. On the coast and in island regions, recruitment difficulties become acute during peak seasons, especially in hotels and touristic accommodations located in places where local labor supply cannot meet demand, and this is further exacerbated by a lack of housing for potential employees potentially coming from other regions of the country to work during peak seasons. These insights reinforce the importance of tailoring recruitment and integration strategies to local labor market conditions, particularly in sectors subject to geographic and seasonal variation.

Scientific, Intellectual and Creative Services

The qualitative findings for this sector are based on consultations with employers across a range of knowledge-intensive and service-oriented industries, including IT, consulting, legal services, marketing, and finance.[53] Participants held senior roles in recruitment, human resources, and team management, and represented both MSMEs and large multinational firms. Their input offers valuable insights into cross-cutting challenges related to talent acquisition, evolving technical skill requirements, and the integration of soft skills in high-pressure and innovation-driven work environments.

[53] Additional KIIs will be conducted in this sector to collect additional information on critical occupations and findings will be incorporated in the final report.

Table 11: Consultation participants: Scientific, intellectual, and creative services

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Consulting firm specializing in public policy, social innovation, and citizen participation.	Recruitment & Education Lead and IT Talent Specialist	Granada	Andalusia	Medium
FGD	Professional services company offering legal, tax, and business consulting.	Head of Human Resources and Labor Advisor	Azuaga	Extremadura	Micro
FGD	Digital agency focused on web development, online marketing, and IT solutions.	Head of Human Resources and Chief Marketing Officer	Almendralejo	Extremadura	Small
FGD	One of Spain's largest multinational banks	Team Consultant and Trainer	Madrid	Madrid	Large
FGD	Law firm offering specialized legal advice and representation in various fields	Manager	Alicante	Valencia	Micro
FGD	Technology company providing IT equipment, systems integration, and support services.	Head of Recruitment and Human Resources	Bollullos de la Mitación	Andalusia	Medium
KII	Consulting company with a role in strategic procurement and administrative management across sectors.	Head of Strategic Procurement, HR, and Administration.	Málaga	Andalusia	Micro
KII	Small audiovisual production company based in Madrid, focused on video and photography production, with both personal and socially oriented projects.	CEO/Company Manager	Madrid	Madrid	Small
KII	Tenured Scientist at the Spanish National Research Council; Institute of Fundamental Physics. Expert researcher in the Molecular Astrophysics Group of the IFF.	Scientific Researcher	Madrid	Madrid	Public Administration
KII	Toyota Spain. The interviewee also owns a marketing and advertising agency and teaches in a Higher Vocational Training program in Marketing and Advertising.	Marketing Manager	Córdoba	Andalusia	Large

Validation of Preliminary Critical Occupations

Employers broadly validated many of the critical occupations identified in the top-down analysis but noted that firms often require more cross-functional profiles than those captured in the quantitative list. Participants agreed that managerial and director-level roles were particularly difficult to fill, especially those

involving financial oversight, client management, or team leadership, such as Financial Directors, for instance. These positions were seen as requiring not only technical expertise but also soft skills and trust-building capacity, making them uniquely complex. Participants did, however, question the inclusion of certain professions, such as lawyers, suggesting that while relevant for large corporations, they do not represent the hiring priorities of smaller firms which make up the bulk of Spain's business landscape.

The question on the validation of preliminary critical occupations led to a broader discussion on the limitations of highly specialized occupational lists. Participants across the sector stressed that many firms seek "360-degree profiles", placing strong emphasis on versatile, cross-functional candidates. Stakeholders noted that smaller firms often lack the scale or resources to support narrowly defined functions, resulting in a strong preference for professionals capable of performing a range of tasks, requiring individuals across occupations to have high adaptability and managerial acumen. Even in larger companies, there seems to be a tendency to favor employees who can operate across domains, such as digital marketing staff who are expected to handle both strategy and visual content creation, for instance. This demand for multifunctionality is compounded by a widespread perception that recent graduates are overly specialized, often lacking the broader experience and soft skills needed to perform in dynamic, client-facing environments. As a result, employers in the sector consistently highlighted that interpersonal attributes, such as critical thinking, empathy, communication, and stress management, are often more decisive in hiring than purely technical qualifications.

Additional Occupations Raised as Critical

A range of emerging and hybrid roles were raised as critical by employers, most of which require a combination of technical, analytical, and interpersonal skills. Participants emphasized that these roles frequently fall between traditional occupational categories, which may explain their absence from the top-down list. Notably, roles in data engineering, data analysis, and artificial intelligence were repeatedly cited as facing serious supply shortages, largely due to a lack of formal training programs aligned with industry needs. Positions that combine technical expertise with commercial or client-facing responsibilities were also flagged, including:

- Purchasing specialists combining procurement knowledge with advanced IT knowledge, English proficiency, and sometimes Chinese. This falls under occupation 3323: Buyers, although qualitative data only supports the inclusion of IT-related buyers specifically.
- Logistics managers with region-specific knowledge (e.g., China), IT skills, and leadership capacity. The corresponding occupation is 1324: Supply, distribution and related managers, particularly 1324.3: Logistics managers.
- Search Engine Optimization (SEO) analytics roles that bridge communications and data, often lacking due to insufficient statistical training in relevant degree programs. The corresponding occupation falls under 2513: Web and multimedia developers, specifically 2513.2: SEO experts.
- Specialists in Artificial Intelligence (AI), including experts in the ethics of AI, raised as a growing area of concern for future talent planning. While not many AI-related occupations are currently part of the ISCO list, the most relevant existing occupation is 2511.11: Artificial Intelligence engineer, which falls under the 4-digit occupation 2511: Systems analysts.

Skills and Competency Gaps

The sector faces pronounced shortages of candidates with blended technical and interpersonal skills, especially in IT roles, compounded by outdated or overly narrow formal training pathways. Employers reported a significant lack of formal education offerings in fast-growing fields such as data engineering, AI,

and cloud computing. As a result, companies are often forced to create their own training programs or rely on intensive mentoring to prepare candidates for operational roles. In addition to gaps in technical knowledge, employers noted that many job seekers, particularly recent graduates, lack the cross-functional competencies needed to perform in smaller firms, where multitasking is essential. Participants also expressed concern about low English proficiency levels, particularly for roles involving international communication or negotiation. While B1/B2 is common on CVs, spoken fluency was frequently judged to be lower and inadequate for professional interaction.

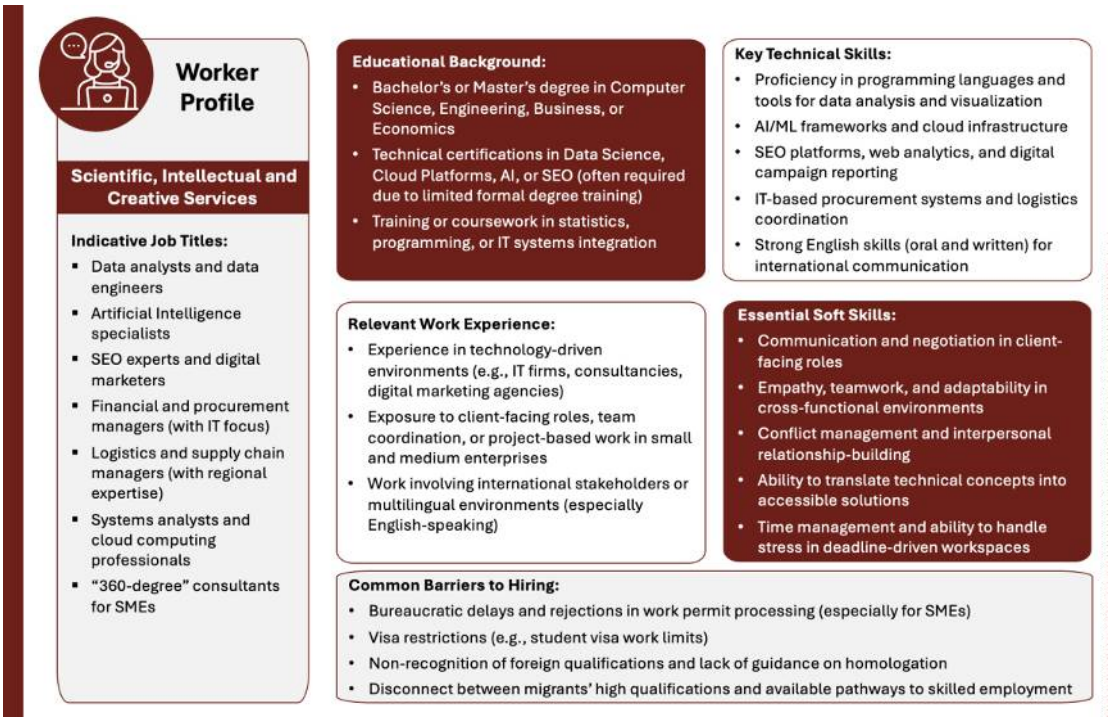
Soft skill deficiencies were described as particularly acute across the sector, especially in roles that combine technical competence with client or team interaction. Employers highlighted the difficulty of finding candidates who could effectively communicate, negotiate, manage stress, and operate with empathy and collaboration – skills that are essential in consulting, marketing, advisory services, and leadership roles. A recurrent concern was the limited interpersonal skills observed in IT professionals, who, while technically capable, often struggled with verbal expression, teamwork, and engaging with clients or colleagues. This disconnect was seen as especially problematic in small companies, where individuals are expected to interact fluidly across functions and adapt to rapidly changing demands. The ability to manage interpersonal conflict and maintain client relationships was repeatedly raised as a decisive factor in hiring, particularly for managerial or client-facing positions. The gap between technical capability and commercial acumen was also flagged, with many candidates proficient in digital tools or programming languages but lacking the communication and persuasion skills needed to explain their products or solutions effectively in competitive market settings.

Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

While some employers in the sector have actively tried to hire highly qualified migrants, especially in technology-related fields, they reported facing substantial legal and administrative obstacles that disproportionately affect SMEs. Larger companies appear better equipped to navigate existing migration pathways, often benefiting from international offices or HR departments familiar with institutional procedures. In contrast, MSMEs, where the majority of employment takes place – 61% as of April 2025 – face what participants described as an "opaque" and excessively bureaucratic system. Several employers shared experiences of rejected work permit requests, visa incompatibilities (e.g., 30-hour limits on student visas), and a lack of flexibility in recognizing foreign qualifications. These barriers frequently led companies to abandon recruitment efforts, even when qualified migrant candidates were available and willing to work.

Participants expressed frustration that highly skilled migrants already in Spain are often relegated to low-skilled or informal jobs due to the non-recognition of degrees and the inability to access work authorization. Discriminatory attitudes, particularly discrimination toward Latin-American accents, were also cited as barriers to labor market integration. Employers advocated for policy reforms that would simplify visa transitions, improve homologation procedures, and provide clearer guidance to companies seeking to hire migrants. Suggestions included developing streamlined protocols tailored to SMEs, offering access to public training programs for migrants regardless of legal status, and ensuring that migration policy is more closely aligned with real labor market needs, including emerging occupations in the digital economy.

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

While many of the labor market challenges discussed in these sectoral consultations are national in nature, some participants pointed to regional and local specificities. These are reported to shape both recruitment patterns and the participation of migrant workers in scientific, intellectual, and creative occupations. These differences appear to be influenced not only by firm location, but also by the size of the municipality and the local migration profile. For instance, one participant working in an IT firm in Seville described collaborating with the local public university to recruit interns, suggesting the availability of early-career talent may be linked to proximity to higher education institutions. By contrast, a legal professional in Alicante acknowledged the presence of a large migrant population in the region but noted that her own small firm does not typically hire migrants in legal roles. Another participant from a small town in Extremadura emphasized that migrants in her locality tend to be concentrated in other sectors, such as agriculture or care, and are not often seen in the professional services space.

Participants also highlighted city-level developments that influence sector growth. In Granada, for example, one stakeholder referenced the creation of a national artificial intelligence agency as a factor expected to stimulate demand for digital skills in the region, while also noting the presence of local migrant support organizations such as Granada Acoge. Differences in the size of local labor markets were also cited, similarly to what happened in other sectoral discussions, with smaller towns perceived as offering fewer opportunities for foreign professionals, in contrast to urban centers where issues such as the underemployment of highly qualified migrants are more visible than a lack of opportunities in general. These insights underscore that while sector-wide trends are the most prominent, regional contexts also have the potential to shape who gets hired, what skills are in demand, and how migrants are integrated across Spain's knowledge-based sectors.

Healthcare and Education

This section draws on insights from a diverse set of institutions involved in the delivery of health and education services, as well as those engaged in workforce advocacy and training.[54] Participants included representatives from public healthcare providers, specialized care centers, vocational and language schools, pharmacies, emergency services, and trade unions. Their roles spanned operational management, clinical supervision, and training leadership, enabling a nuanced understanding of recruitment bottlenecks, evolving qualification needs, and the centrality of soft skills in both care and educational professions.

Table 12: Consultation participants: Healthcare and education

FGD / KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Regional association of municipalities in Córdoba working with the Employment Department to promote local development and job programs.	Director of Employment and Entrepreneurship	Campiña Sur, Córdoba	Andalusia	Public Admi-nistration
FGD	Rehabilitation and social reintegration center focused on supporting individuals with addictions or mental health challenges.	Manager and Physiotherapist	Sevilla	Andalusia	Small
FGD	Public health service of Andalusia, responsible for delivering healthcare across the region.	Head Nurse	Andalusia	Andalusia	Public Admi-nistration
FGD	Health and social care federation of the CCOO trade union, representing workers in these sectors.	Head of Training and Professional Development; Family Doctor and Resident Supervisor	National	National	Union
FGD	National trade union in Spain advocating for workers' rights across various industries.	Representative of Semi-Private Education; Child Psychologist and Teacher	National	National	Union
KII	Language school specializing in English, French, and Italian instruction	Director	Sevilla	Andalusia	Medium
KII	National organization that promotes the rights and social inclusion of people with intellectual and developmental disabilities.	Director	National	National	Large
KII	Specialized educational center dedicated to supporting children and youth with intellectual disabilities. The center provides individualized educational and developmental programs aimed	Director	Granada	Andalusia	Large

[54] Additional KIIs will be conducted in this sector to collect additional information on critical occupations and findings will be incorporated in the final report.

	at fostering autonomy, inclusion, and holistic growth.				
KII	Small-sized pharmacy that sells products both in-store and online, with a workforce that varies depending on the time of year.	CEO	Zafra	Extremadura	Micro
KII	Civil Protection Municipal emergency medical service in Madrid that provides out-of-hospital urgent and emergency healthcare	Nurse and Teacher	Andalusia	Andalusia	Public Admi-nistration
KII	A veterinarian agricultural organization operating at the national level. It is a pluralistic, independent, and advocacy-oriented organization, with representation across all Autonomous Communities	Veterinarian	National	National	Industry Association

Validation of Preliminary Critical Occupations

Stakeholders largely validated the inclusion of general practitioners and nurses as critical occupations. Participants emphasized the growing difficulty of recruiting family doctors (i.e., general practitioners), citing poor working conditions and the limited appeal of primary care, which has led to shortages and emigration of recent graduates. While recognizing a sufficient number of graduating professionals, the precarious and unstable nature of contracts in public administration was frequently cited as the primary reason for recruitment difficulties and a significant "brain drain" of both doctors and nurses to other regions with more stable opportunities. Likewise, nursing professionals were unanimously described as scarce, particularly in elderly care, due to low pay and high international demand for Spanish-trained nurses.

However, surprise was expressed regarding the inclusion of certain roles that are part of public education systems, such as primary and secondary school teachers, for which applicant numbers often far exceed available positions.[55] Participants suggested that these shortages may apply to the private sector or specific geographies, but do not reflect the broader public sector reality. There was also a general disagreement towards the inclusion of education managers as a critical occupation, as hiring process for these roles are usually competitive with a high number of applicants. Similarly, while there's no difficulty in finding candidates for teachers' aides, the challenge lies in identifying individuals with the necessary personal competencies.

The KIIs also shed light on the inclusion of veterinarians as a critical occupation. While agreeing with its classification, it was strongly emphasized that the difficulty isn't a lack of qualified professionals or students. Instead, the issue stems from poor working conditions, including long hours and low pay, particularly in clinical practice (both small and large animals). This leads to high rotation and a preference among veterinarians for administrative roles or public service positions offering better conditions, rather than a genuine shortage of labor.

[55] There are union reports that also report on this applicant surplus; see, for instance, the 2022 report by the Central Sindical Independente y de Funcionarios (CSIF), reporting that 209691 people competed for 17756 teaching positions through public exams: https://www.csif.es/uploads/articulo/archivosAdjuntos/65c6b05272b93.pdf

Additional Occupations Raised as Critical

Participants raised a variety of difficult-to-fill roles not in the quantitative list, highlighting bottlenecks in training, qualification recognition, and candidate motivation. These occupations, while less visible in national statistics, emerged as critical in the qualitative findings due to regulatory constraints, low applicant pools, or sector-specific wage structures. Among these were:

- Trainers and instructors for employment and vocational programs. While occupation 2320: Vocational education teachers was already part of the preliminary COL, the qualitative data collection highlighted the specific challenges to find teachers certified to teach modules governed by Spain's certificates of professionalism and those required for temporary positions.
- Cybersecurity teachers, who are scarce in the labor market because professionals with up-to-date technical knowledge often command significantly higher salaries in the private sector than in training programs. There is no specific occupation for these teachers, but they are assumed to be included under 2310: University and higher education teachers, and under 2320: Vocational education teachers.
- Speech therapists, especially in institutions working with individuals with intellectual and developmental disabilities, were described as extremely difficult to recruit. The corresponding occupation is 2266: Audiologists and speech therapists.
- Professionals for early intervention, a profile requiring both specialized training and relevant experience, was flagged as particularly hard to fill. This falls under occupation 3412: Social work associate professionals.
- German teachers were specifically mentioned by a private language academy as being among the hardest profiles to find in the education sector. This falls under occupation 2353: Other language teachers.
- Pharmacists, including pharmacy auxiliaries (though this role is expected to be phased out due to regulatory changes) and especially pharmacy technicians were highlighted as very difficult to hire, particularly for temporary contracts. The corresponding occupation is 2262: Pharmacists.
- Technicians in emergency health were identified as difficult to cover in some regions, including Andalusia, due to the regulatory challenge in the recognition of their professional competencies, leading to them being hired for lower-qualified roles and prompting them to seek opportunities elsewhere. The corresponding occupation is 3258: Ambulance workers.

Skills and Competency Gaps

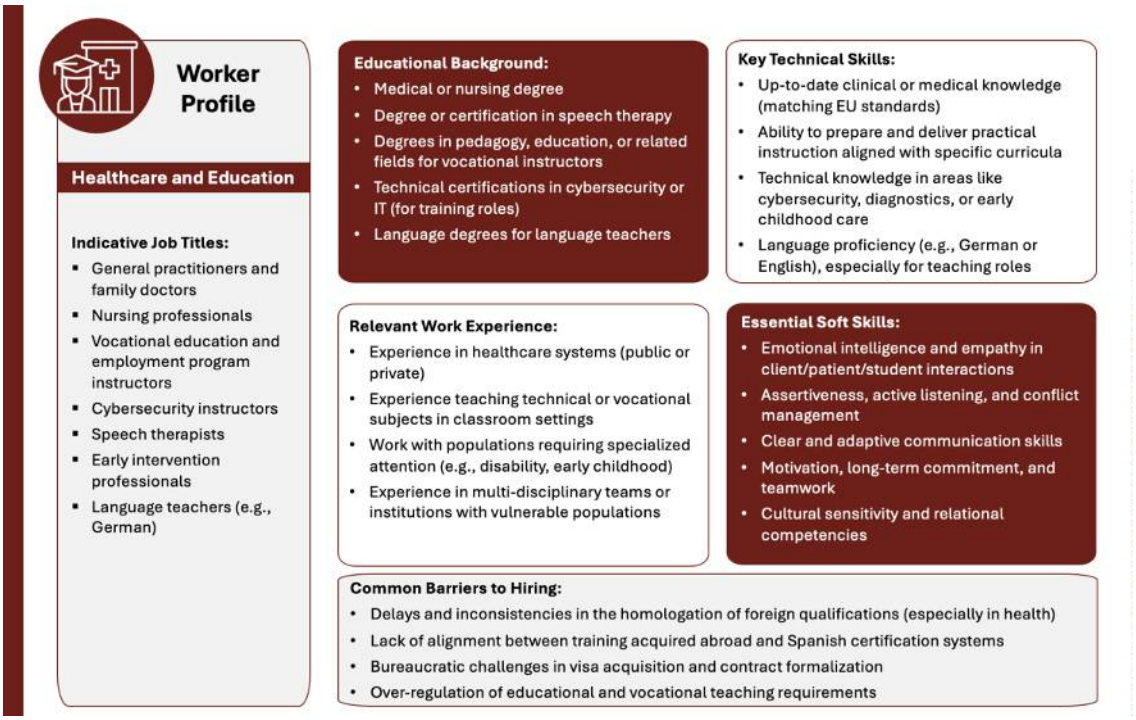
Skill mismatches in the health and education sectors stem from both regulatory over-specification of technical requirements and a widespread lack of essential soft skills. In education, participants noted that newly graduated teachers often lack the practical knowledge, engagement, or adaptability needed for vocational instruction, particularly in high-demand technical fields like cybersecurity. A significant challenge is finding professionals across all educational roles (teachers, speech therapists, physiotherapists, psychologists, and support staff/caregivers) who possess the high specialization required to work with students presenting severe behavioral problems and those with extensive health needs. In pharmacy, in addition to core professional knowledge, there is also an increased need for contemporary skills in marketing, merchandising, social media management, and video editing/mounting, alongside mandatory continuous training.

Soft skills were universally identified as a decisive constraint across all roles. Emotional intelligence, communication, assertiveness, and resilience were repeatedly cited as essential but rare attributes, especially in teaching and caregiving professions. Participants described multiple cases where roles remained vacant for extended periods, not due to a lack of formally qualified candidates, but because applicants lacked interpersonal capabilities. In physiotherapy and speech therapy, candidates with strong "people skills" were preferred over more experienced professionals who lacked empathy or adaptability. More broadly, participants noted what they described as a generational decline in motivation, initiative, and workplace readiness, attributing it to cultural and educational factors. These gaps are particularly difficult to assess through interviews or trial periods, as initial impressions often fail to reveal long-term commitment or behavioral fit.

Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

While some employers in the healthcare sector have integrated Latin American professionals to help fill critical shortages, the legal and bureaucratic obstacles to hiring remain significant. Employers generally expressed willingness to hire migrant workers, acknowledging that the public health system significantly benefits from their contributions. Participants shared experiences of working alongside Latin American doctors and nurses, often as a stopgap solution to staffing deficits, but noted that many of these professionals require significant retraining or credential validation to work at their full capacity. On the technical side, the healthcare sector struggles to incorporate foreign-trained professionals due to gaps in training equivalency and slow homologation processes. For example, nurses from Latin America are often only recognized at the level of auxiliary staff, and medical specializations completed abroad frequently do not meet Spanish MIR (Resident Medical Doctor / *Médico Interno Residente*) requirements. In education, direct experience with Latin American migrant workers was more limited, but when present, it was viewed positively. One language academy director described Latin American teachers as personable, prepared, and pedagogically effective, expressing frustration at legal constraints preventing their formal recruitment.

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

Regional disparities were a recurring theme in discussions, particularly in relation to staffing shortages, mobility patterns, and the decentralized structure of Spain's public service systems. Many participants spoke from their experience working in specific provinces or under the jurisdiction of regional administrations, highlighting how autonomous community regulations and geographic dispersion shape both hiring challenges and workforce retention. One of the most prominent distinctions raised was the difficulty of attracting and retaining professionals in rural or remote areas. Stakeholders noted that while urban centers may have an adequate supply of candidates, rural municipalities and geographically dispersed locations face persistent vacancies, particularly for generalist medical roles. Despite targeted measures such as longer contracts or financial incentives offered by some autonomous communities (e.g., three-year placements for family medicine residents), these posts remain unattractive to many professionals, especially younger cohorts.

Participants also noted how regional regulatory frameworks create variation in entry pathways and credential recognition, particularly in education. For example, one union representative suggested that the lack of Latin American teachers in Andalusia may stem from regional qualification requirements that are difficult for foreign-trained professionals to meet. Additionally, language requirements in autonomous communities with co-official languages were flagged as another potential access barrier. Mobility challenges, particularly difficulties in finding housing, were also raised as a factor limiting workforce stability, but education staff is nonetheless described as increasingly mobile, frequently moving between temporary posts in different cities based on personal or professional interests. Collectively, these insights reinforce the need to tailor policy responses to regional contexts when addressing critical shortages in healthcare and education.

Care, Cleaning and Housekeeping

The findings in this section are informed by a broad range of organizations involved in the provision, coordination, and advocacy of care and cleaning services. Participants included directors and coordinators of elderly care facilities, home assistance services, and special employment centers, alongside representatives from the social services sector and organized labor. This combination of institutional and union perspectives enabled a comprehensive view of both the structural labor shortages reported by employers and the regulatory and contractual conditions emphasized by worker representatives.

Table 13: Consultation participants: Care, cleaning, and housekeeping

FGD/KII	Description of the Organization	Stakeholder's Position	City / Municipality	Region	Company Size
FGD	Provincial office managing social welfare services in Albacete.	Social Worker	Albacete	Castilla la Mancha	Public Admi-nistration
FGD	Special employment center promoting labor inclusion for people with disabilities.	Technical Director	Sevilla	Andalusia	Small
FGD	Association providing support and services for people with intellectual or developmental disabilities in Almería.	Coordinator and Specialist in Gender Equality and Labor Resources	Almería	Andalusia	Small
FGD	Residential care facility for elderly individuals.	Director	Sevilla	Andalusia	Large

FGD	Community center offering activities and support for senior citizens in Granja de Torrehermosa.	Director and Social Worker	Badajoz	Extremadura	Public Admi-nistration
FGD	Municipal community social services department of Sanlúcar la Mayor.	Coordinator of the Home Help Service	Sevilla	Andalusia	Public Admi-nistration
KII	Early childhood center that supports children and their families through holistic education and parenting guidance	Director	Madrid	Madrid	Small
KII	Union representing and advocating for workers in the cleaning industry.	Head of the Cleaning Sector at a big Spanish Union.	Navarra	Navarra	Union

Validation of Preliminary Critical Occupations

Employers widely validated the criticality of personal care and cleaning occupations, though skepticism emerged regarding management roles, and union perspectives questioned whether labor shortages truly exist. Focus group participants emphasized the growing difficulty in hiring personal care workers and cleaning staff, particularly for home-based and institutional settings. These roles were seen as increasingly hard to fill due to irregular hours, inflexible hiring laws, and poor job attractiveness relative to the demand. The inclusion of funeral services in the preliminary list was also viewed as reasonable. However, strong disagreement was expressed about the inclusion of "directors," which participants felt was a low-demand role with many trained professionals and minimal hiring activity. In contrast, a union representative consulted through an interview explicitly stated that none of the listed cleaning roles were difficult to fill, citing high worker availability and strong demand for these jobs. They attributed observed hiring difficulties not to a labor shortage, but to the prevalence of irregular employment and structural shortcomings in enforcement and working conditions.

Additional Occupations Raised as Critical

In addition to the occupations included in the preliminary list, a couple more were flagged by employers as particularly difficult to fill, reflecting operational realities in both care and cleaning services. These included:

- Nursing staff, particularly in elderly care facilities, described as "almost inaccessible" due to shortages, poor working conditions, competition from the public sector, and lack of specialization in geriatrics. Despite being a regulated profession, employers noted that even competitive schedules and permanent contracts were often insufficient to retain staff. This corresponds to occupation 2221: Nursing Professionals, which was also part of the preliminary COL under the Healthcare and Education sectoral group.
- Regarding cleaning roles, the preliminary list included ISCO codes 5152: Domestic housekeepers and 9129: Other cleaning workers. However, based on widespread feedback from employers that all cleaning-related positions were difficult to fill, especially in contexts such as care centers, home-based services, and rural areas, two other occupations were also added to the list of critical occupations – 9111: Domestic cleaners and helpers and 9112: Cleaners and helpers in offices, hotels and other establishments.

Skills and Competency Gaps

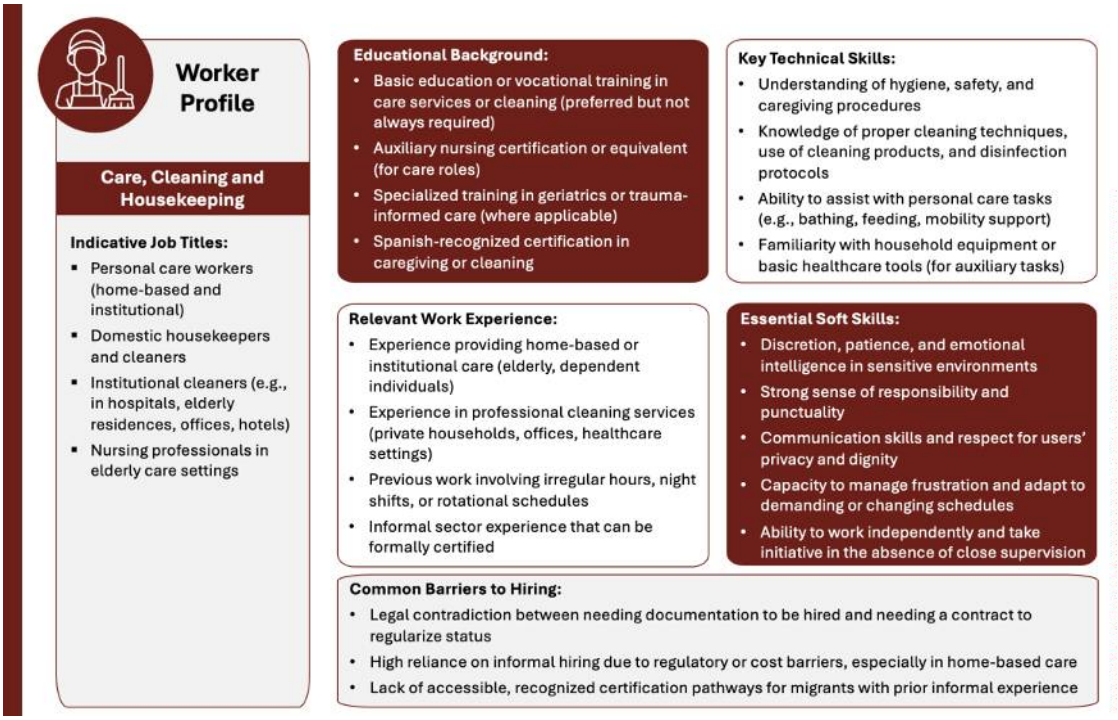
Employers reported skill gaps concentrated around three core areas: alignment with regulatory and credentialing requirements, behavioral suitability, and interpersonal competencies. On the other hand, union feedback suggested that technical and soft skills are rarely a selection criterion in practice. From the employer side, difficulties included mismatches between training and role expectations, such as auxiliary nurses being unwilling to perform domestic tasks, or candidates lacking required specialization (e.g., in geriatrics or trauma-informed care). For foreign professionals, especially in higher-skilled roles like nursing, qualification homologation delays of two to three years were identified as a major barrier to employment.

Soft skills were considered indispensable for both cleaning and care roles yet widely lacking. Employers described challenges finding individuals with basic professional responsibility, emotional intelligence, discretion in users' homes, and the capacity to manage frustration. Additional challenges included high turnover, poor adaptation to irregular schedules, and low resilience under demanding conditions. In contrast, the union representative argued that most employers in the cleaning sector do not require or assess either technical training or soft skills, particularly for entry-level roles. Instead, the issue was framed as structural: workers are available and willing, but companies offer unattractive conditions (e.g., fragmented hours, instability) and fail to implement strategies for retention.

Employer Attitudes and Perceived Challenges in Hiring Migrant Workers

Migrant workers, particularly women from Latin America, are recognized as playing a central role in the care and cleaning sectors, yet legal and regulatory constraints continue to push many into informal employment. Employers in the FGD acknowledged the essential contribution of migrant workers in covering roles that are otherwise unfilled, especially in rural areas and for 24/7 care tasks. However, formal hiring is often contingent on administrative regularization. Some employers explicitly stated they only hire migrants who have completed Spanish certifications or who already possess legal documentation, while others described informal hiring as widespread and sometimes necessary due to urgency or cost. The union perspective reinforced these dynamics, noting that irregular hiring is particularly common in home-based care, where undocumented workers face unfavorable conditions without legal protections. A major concern raised was the “trap” of regularization requirements – where workers need a job contract to obtain documentation, but employers require documentation to issue a contract. This systemic contradiction was described as reinforcing informality and leaving workers vulnerable.

Indicative Profile of In-Demand Workers



Employer Insights on Regional Heterogeneity of the Labor Market

Regional and local contexts shape the delivery of care, cleaning, and housekeeping services across Spain. Stakeholders highlighting the most significant contrasts between rural and urban areas, and between different levels of public sector governance. These divergences influence not only labor demand but also the conditions under which workers, particularly migrants, are employed. In rural areas such as Albacete and Granja de Torrehermosa (Extremadura), participants noted a general scarcity of formal employment opportunities and a high prevalence of informal work arrangements. The underground economy was described as pervasive, particularly in domestic services, where employment without contracts remains common. In these contexts, attracting qualified was described as extremely difficult. Challenges were further compounded by the absence of specialized support infrastructure, such as itinerant mental health teams, and a lack of local companies capable of managing formal service provision.

Differences in public sector provision also emerged across regions and municipalities. For instance, a representative from municipal social services in Sanlúcar la Mayor, Andalusia, emphasized that recent changes in contracting laws had hindered their municipality's ability to make temporary hires, a critical need in services where demand fluctuates daily. Meanwhile, a participant from Castilla-La Mancha noted that regional authorities delegate social services to municipalities and civil society organizations, leading to chronic underfunding and precarious employment conditions. These challenges were seen to disproportionately affect small towns, where limited budgets and fragmented responsibilities reduce service quality and job stability. Finally, participants from smaller municipalities described how social dynamics, such as the difficulty of maintaining discretion when providing in-home services in tight-knit communities, could act as an additional barrier to both hiring and retention.

3.3 Final Critical Occupations List

This section presents the results of the consolidation process, reflecting the integration of top-down quantitative indicators with qualitative insights gathered through employer consultations. The objective is to identify a set of occupations that are not only difficult to fill but also strategically important for Spain's labor market. As described in Section 2, this process is guided by a structured matrix comparing evidence across multiple dimensions – statistical signals, spontaneous employer validation, stakeholder suggestions, and sectoral relevance – allowing for triangulation and professional judgment rather than rigid scoring or thresholds. The final list includes 54 occupations, and their breakdown by sector and ISCO-08 major group is summarized in Table 14 below.

Out of the 96 occupations initially flagged as potentially critical through the top-down analysis, 30 occupations (approximately 31%) were ultimately retained in the final COL, having been validated through strong and consistent bottom-up evidence. The remaining 66 occupations were excluded for various reasons: 18 were explicitly rejected by stakeholders, 26 received inconclusive or contradictory feedback, 11 were weakly endorsed but lacked sufficient justification to warrant inclusion, and 11 faced a lack of evidence. Conversely, 24 additional occupations not present in the top-down list were incorporated based on compelling qualitative evidence from FGDs and KIIs. These figures highlight both the value of bottom-up validation and the importance of applying professional judgment to ensure the final list is anchored in robust, triangulated evidence.

Table 14: Final critical occupations by sectoral classification & ISCO-08 group

Sectoral Classification & ISCO-08 1-digit Group	Number of Occupations
Agriculture (including livestock, forestry and fishing)	**10**
3 - Technicians and Associate Professionals	1
6 - Skilled Agricultural, Forestry and Fishery Workers	6
9 - Elementary Occupations	3
Care, Cleaning and Housekeeping	**6**
5 - Service and Sales Workers	2
9 - Elementary Occupations	4
Construction, Installation, and Assemblers	**10**
3 - Technicians and Associate Professionals	1
7 - Craft and Related Trades Workers	8
8 - Plant and Machine Operators, and Assemblers	1
Healthcare and Education	**8**
2 - Professionals	7
3 - Technicians and Associate Professionals	1
Manufacturing (including industrial machinery)	**9**
7 - Craft and Related Trades Workers	5
8 - Plant and Machine Operators, and Assemblers	3
9 - Elementary Occupations	1
Restaurants, Customer Service and Hospitality	**4**
1 - Managers	1
4 - Clerical Support Workers	1

5 - Service and Sales Workers	2
Scientific, Intellectual and Creative Services	**7**
1 - Managers	1
2 - Professionals	5
3 - Technicians and Associate Professionals	1
Total	**54**

The final list of occupations, detailed in Table 15 below, reflect a balance of evidence across both methodological streams. In some cases, top-down findings have been reinforced by strong qualitative validation; in others, critical roles not captured by the statistical analysis have emerged clearly from bottom-up consultations. All inclusions have been made through a review of the evidence base, in line with international practices for COL development.

Table 15: Final critical occupations list

ISCO-08 Code	ISCO-08 Qualification
Construction, Installation, and Assemblers	
3123	Construction supervisors
7111	House builders
7112	Bricklayers and related workers
7115	Carpenters and joiners
7126	Plumbers and pipe fitters
7231	Motor vehicle mechanics and repairers
7232	Aircraft engine mechanics and repairers
7412	Electrical mechanics and fitters
7413	Electrical line installers and repairers
8332	Heavy truck and lorry drivers
Manufacturing (including industrial machinery)	
7212	Welders and flamecutters
7223	Metal working machine tool setters and operators
7233	Agricultural and industrial machinery mechanics and repairers
7411	Building and related electricians
7533	Sewing, embroidery and related workers
8121	Metal processing plant operators
8211	Mechanical machinery assemblers
8342	Earthmoving and related plant operators
9311	Mining and quarrying laborers
Agriculture (including livestock, forestry and fishing)	
3142	Agricultural technicians
6122	Poultry producers
6129	Animal producers not elsewhere classified
6130	Mixed crop and animal producers
6210	Forestry and related workers
6222	Inland and coastal waters fishery workers
6223	Deep-sea fishery workers

9211	Crop farm laborers
9212	Livestock farm laborers
9213	Mixed crop and livestock farm laborers
Restaurants, Customer Service and Hospitality	
1412	Restaurant managers
4224	Hotel receptionists
5120	Cooks
5131	Waiters
Scientific, Intellectual and Creative Services	
1324	Supply, distribution and related managers
2433	Technical and medical sales professionals (excluding ICT)
2434	Information and communications technology sales professionals
2511	Systems analysts
2513	Web and multimedia developers
2529	Database and network professionals not elsewhere classified
3511	Information and communications technology operations technicians
Healthcare and Education	
2211	Generalist medical practitioners
2212	Specialist medical practitioners
2221	Nursing professionals
2262	Pharmacists
2266	Audiologists and speech therapists
2320	Vocational education teachers
2352	Special needs teachers
3213	Pharmaceutical technicians and assistants
Care, Cleaning and Housekeeping	
5152	Domestic housekeepers
5322	Home-based personal care workers
9111	Domestic cleaners and helpers
9112	Cleaners and helpers in offices, hotels and other establishments
9129	Other cleaning workers
9622	Odd job persons

3.4 Most Demanded Skills in Critical Occupations

This section presents an analysis of the most frequently requested skills in job postings for Spain's critical occupations. The main objective is to identify the specific skills that employers look for when advertising vacancies, providing a clearer view of the actual capabilities demanded in the labor market. The data comes from Lightcast, which compiles detailed information from online job postings including all the skills listed by recruiters for each vacancy. While traditional skills-occupation matrix tables (such as that of the European Skills, Competences, Qualifications and Occupations) indicate the skills typically required within a broad occupation category according to various data sources and expert reviews, the Lightcast data instead allows for a detailed mapping of the specific skill requirements by job postings. This skill mapping therefore has the advantage of being unique to the specific sub-occupations and employer needs as indicated in job postings in Spain.

With this information, the top five most frequently mentioned skills were calculated for each critical occupation. To ensure that the analysis highlighted only relevant competencies, a filter was applied so that only skills appearing in at least 5% of all postings for that occupation were considered. This approach means the results focus on skills that are truly common and important for employers, avoiding sporadic or exceptional mentions. The Lightcast data classifies each skill into broader categories and subcategories, which makes it possible to identify the most frequent skill requirements at various categorical levels. It is important to note that due to data availability in Lightcast, this analysis covers 47 out of the 54 critical occupations. There are no skill data for occupations in ISCO Group 6 (Skilled Agricultural, Forestry and Fishery Workers) or for Specialist Medical Practitioners (2212).

The analyses was carried out using all job postings in critical occupations from 2021 to 2024, though results are similar when using only postings from 2024. The results were very consistent across these two timeframes, with the same top ten skill categories and top ten skill subcategories appearing in both, differing only in their ranking. The consistency of these findings between 2024 and 2021-2024 underscores the stable nature of these skill demands over recent years, reinforcing their relevance for both workforce development and migration policy planning.

The analysis of the top ten skill categories in Table 16 reveals that, by broad category, the strongest employer demand is around management and a wide range of information technology skills. The categories most frequently cited across critical occupations were Business and Information Technology, appearing respectively in 42 and 40 critical occupations between 2021-2024. An analysis of the most frequent types of specific skills within this category reveals the Business skill demand is driven by Management and Operations across a wide range of occupations, ranging from health sector to hospitality, agriculture, construction, engineering, logistics, and information technology. Information Technology skills, on the other hand, involve a wide range of specific technical skills which vary heavily across job postings, including different types of programming languages and spanning software development, cybersecurity, enterprise architecture, and IT infrastructure.

Table 16 further reveals additional cross-cutting demand for soft skills, English language, and various types of technical skills in engineering, manufacturing, construction, and health. Physical and Inherent Abilities, notably Planning, Preparedness, and Teamwork, emerge as skill requirements in many critical occupations, as does Cleanliness. English language and Communication skills are also in-demand across a wide range of occupations. In-demand technical skill groups include Engineering (especially Mechanics and Electronics), Manufacturing and Production (especially Machinery and Soldering), Construction, and Health Care (especially Nursing and Pharmaceuticals).

Table 16: Top 10 skill categories in critical occupations, 2021-2024

Skill Category	In # of critical occupations	Top 5 specific skills in critical occupations
Business	42	Management (82%), Operations (9%)
Information Technology	40	Griddle (15%), Cascading Style Sheets (8%), Python (8%), SQL (8%), .NET Framework (8%), PHP (8%), Cyber Safety (8%), ArchiMate (8%), JavaScript (8%), Computer Science (8%), Data Centers (8%), Cyber Security (8%)
Physical and Inherent Abilities	25	Planning (50%), Preparedness (25%), Teamwork (25%)

Media and Communications	20	English Language (80%), Communication (13%)
Engineering	17	Mechanics (55%), Electronics (27%), AutoCAD (9%), Valor PBC (9%)
Maintenance, Repair, and Facility Services	16	Electricity (42%), Preventive Maintenance (25%), HVAC (8%), Boilers (8%), Cleaning Products (8%), Pruning (8%)
Manufacturing and Production	13	Machinery (50%), Soldering (27%), Fabrication (14%)
Law, Regulation, and Compliance	12	Cleanliness (100%)
Health Care	9	Nursing (30%), Pharmaceuticals (20%), Hygiene (10%), Audiology (10%), Companionship (10%), Advising (10%), Regimen (10%)
Architecture and Construction	8	Construction (57%), Carpentry (14%), Weatherization (7%), Hoisting (7%), Sunroom (7%), Woodworking (7%)

Note: The second column counts the number of times each category appears in the "top 5 categories" for a critical occupation. The third column restricts the data to the "top 5 skills" for each critical occupation and presents these skills as a share of all the times a skill in the category appears as a top 5 skill (restricting to those over 5%).

The subcategory-level analysis in Table 17 identifies additional critical skills – notably Salesmanship and Cooking – and reveals which subcategories are driving demand within the broader skill categories. The category-level analysis may miss important skill subcategories which are part of a smaller broader category. Table 17 reveals that General Sales Practices skills (driven by Salesmanship and Sales) as well as Food and Beverage skills (driven by Cooking) are additional skills which appear frequently in critical occupations. Beyond these, the analysis in Table 17 is mostly consistent with Table 16, with critical subcategories including Business Management, Language Competency, Machinery, Construction, and Mechanics, as well as Cleanliness, Planning, and Preparedness. A few critical categories – Information Technology; Maintenance, Repair, and Facility; and Health Care – did not emerge in the subcategory analysis because they involve a wide range of skills spanning various subcategories. Overall, these results illustrate the cross-cutting mix of managerial, organization, socio-emotional, and technical skills sought by employers.

Table 17: Top 10 skill subcategories in critical occupations, 2021-2024

Skill Subcategory	In # of critical occupations	Top associated skills in critical occupations
Business Management	26	Management (100%)
Language Competency	25	English Language (96%)
General Sales Practices	19	Salesmanship (64%), Sales (36%)
Machinery	11	Machinery (100%)

Occupational Health and Safety	11	Cleanliness (100%)
Initiative and Leadership	10	Planning (100%)
General Construction and Construction Labor	9	Construction (89%), Sunroom (11%)
Mechanical Engineering	9	Mechanics (100%)
Personal Attributes	8	Preparedness (100%)
Food and Beverage	7	Cooking (100%)

Note: The second column counts the number of times each subcategory appears in the "top 5 subcategories" for a critical occupation. The third column restricts the data to the "top 5 skills" for each critical occupation and presents these skills as a share of all the times a skill in the subcategory appears as a top 5 skill (restricting to those over 5%).

This analysis highlights the utility of job vacancy data for identifying job-level skill needs within occupations and to support the design of skills training and labor mobility initiatives. In addition to informing skills demand for training programs in Spain, the skill requirements identified in Spanish critical occupations using Lightcast can be compared with those from job postings in other countries including potential origin countries for migration. While the present report remains focused on data from Spain, a cross-country analysis is critical for identifying the overlap in skill needs within critical occupations with potential origin countries to inform training and labor mobility pathways.[56]

[56] For an example of this analysis, see the companion report "From Skills to Opportunity: Assessing the viability of a Global Skills Partnership between the Dominican Republic and Spain"

CHAPTER 4: EMPLOYER AND STAKEHOLDER PERSPECTIVES ON LABOR MIGRATION

4.1 Types of Potential Employers to Absorb Migrant Workers

The ability of employers in Spain to absorb migrant workers can be shaped not only by sectoral labor demand but also by firm characteristics such as size, organizational structure, and access to public funding. This sub-section synthesizes findings from employer interviews to examine how employer type influences the feasibility and frequency of hiring migrants. While labor shortages are present across sectors, the ability to navigate the legal and administrative landscape that governs migrant hiring varies widely between large firms, SMEs, public sector entities, and subcontracting arrangements.

4.1.1 Large Companies vs. MSMEs

A recurring theme across stakeholder consultations is that larger companies are structurally better positioned to hire migrant workers through formal pathways. Large firms, especially multinationals and those engaged in mass recruitment, have more resources and experience to manage the complex administrative procedures involved in hiring foreign workers. For example, one stakeholder who recruits for a teleoperator company employing thousands of workers reported that nearly 45% of its staff were foreign nationals, suggesting an institutional familiarity with visa processes and labor market integration. Large hotel chains, restaurants, and some industrial or mining firms were also more likely to hire international talent for critical roles. In some cases, large companies also partner with NGOs or public institutions to facilitate the legal hiring or regularization of migrants, including vulnerable groups such as refugees or undocumented workers.

In contrast, MSMEs, despite representing the vast majority of Spain's productive fabric, face significant obstacles in employing foreign workers legally.[57] Many report that the bureaucracy involved is prohibitive, especially for businesses with limited administrative capacity or legal expertise. One small business owner

[57] Ministerio de Industria y Turismo. (2025). Cifras PYME. Datos Abril 2025. Available: https://ipyme.org/Publicaciones/Cifras%20PYME/CifrasPyme_abril_2025.pdf

described the legal hiring process as an “odyssey,” requiring extensive paperwork and long wait times. This dynamic leads many small employers to favor candidates who already possess the required visa status or work permit, even if less qualified, in order to avoid administrative complications. Others may simply refrain from hiring migrants altogether due to the difficulty in converting student or tourist visas into work permits, processes that smaller companies rarely have the capacity to initiate or follow through. For instance, the director of a language academy expressed frustration at being unable to legally hire highly qualified Latin American teachers, noting that the bureaucratic hurdles were "impossible" to overcome unless candidates had fully formalized their status prior to the recruitment process.

4.1.2 Public vs. Private Sector Employers

Migrant workers are present across both public and private employment contexts in Spain, though the nature of the challenges faced differs. In the public sector, Latin American workers are reported in various roles, including doctors in public hospitals and cleaning staff in public schools. However, public sector hiring is often constrained by rigid recruitment criteria, such as formal qualification homologation, which can delay or prevent migrant integration even in areas with recognized labor shortages. Public or publicly subsidized services, such as home care, education, or early childhood intervention, also report recruitment and retention issues tied to funding instability. These entities often operate under constrained budgets, offering part-time or short-term contracts with relatively low pay, which diminishes the attractiveness of positions for both national and migrant workers. In the private sector, employer interest in hiring migrant workers is generally high across all sectors but the legal and procedural barriers are a dominant constraint, particularly for SMEs.

4.1.3 Employers Relying on Subcontractors

An additional employer category that emerged in the findings is a lead contracting company relying on subcontractors, particularly in the construction sector. These companies often do not hire laborers directly but instead subcontract entire service packages, including staffing. In practice, this structure enables large construction firms to access foreign labor without managing the formal recruitment or immigration paperwork themselves. Stakeholders reported that migrant labor is widespread among subcontracted crews, often including workers from Morocco, Peru, Romania, and more broadly Latin America. One main contractor described working with subcontractors that brought in “well-prepared and hardworking” migrant staff, suggesting that subcontracting can serve as a buffer for labor shortages, albeit with limited oversight regarding legality or working conditions. While this model may facilitate the absorption of migrant workers, it can also be associated with irregular hiring or weak labor protection practices, depending on the subcontractor’s overall policies and practices.

4.2 Stakeholder Perspectives on Labor Migration Policy

4.2.1 Assessment of Existing Migration Pathways

The consultations highlighted that while several migration channels are formally in place, each pathway faces important implementation challenges. These challenges limit their potential to respond to the scale and diversity of labor needs across the economy. Stakeholders also noted that most labor migration to Spain currently occurs outside of formal programs and often follows irregular or delayed regularization

routes such as the *arraigo* framework. The assessment below is structured by type of migration pathway, including emerging mechanisms introduced under recent regulatory reforms.

GECCO System for Seasonal Migration

Institutional views of the GECCO system reflect both strong support and qualified reservations regarding its scope and replicability. Several stakeholders, including SEPE, regard the GECCO system as a foundational tool to manage circular migration in sectors with seasonal labor demand. They emphasize its ability to provide a regular, rights-based channel for thousands of workers, primarily in agriculture and hospitality, ensuring legal employment, planning, and guaranteed return. SEPE highlights that approximately 40,000 seasonal workers were hired through GECCO in the past two years, and recent legal changes (e.g., longer contract durations and four-year authorizations for repeat workers) have further enhanced its operational stability. In 2024, a program targeting women in Morocco was launched, with pilot efforts planned in other African countries.

However, other stakeholders offered a more cautious appraisal. They noted that GECCO works effectively only in very specific contexts, such as the red fruit harvest in southwestern Spain. Stakeholders argue that this case succeeds because it involves:

- Highly concentrated production seasons,
- A limited and well-defined skill set (often met by women),
- Strong coordination between employers, local authorities, and consulates,
- A long-standing implementation history, with nearly two decades of experience using seasonal circular migration arrangements for red fruit harvest, allowing for building trust and operational improvements over time.

They cautioned that extending the program's success to other sectors will require increased flexibility and adaptation. The planning requirements, rigid timelines, and supervision needs are not easily replicable in sectors with more diffuse or unpredictable labor demands. Additionally, some stakeholders argued that the program tends to recruit women with family responsibilities in their countries of origin, which could be seen as a mechanism to ensure return compliance, and questioned whether this constituted good migration policy or simply reflected systemic constraints in more flexible migration management.

Arraigo Regularization Pathways

***Arraigo* pathways were consistently described as indispensable tools to integrate migrants already present in Spain, albeit as a consequence of systemic gaps in ex ante labor migration management.** Stakeholders across institutions viewed *arraigo*, particularly the recently introduced *arraigo para la formación*, as one of the most pragmatic mechanisms for addressing persistent labor shortages in sectors such as construction, care, and agriculture. These pathways allow migrants in irregular situations to regularize their status through training and subsequent employment. SEPE emphasized the importance of *arraigo para la formación* in accelerating labor market integration and reducing informality. A common perception is that *arraigo* functions as a "post-hoc correction mechanism" for labor shortages that were not planned for through legal entry schemes. In practice, many Latin American migrants enter visa-free, stay irregularly, and later apply for regularization through *arraigo*. *Arraigo* is therefore perceived as more accessible and practical than traditional work visa routes, even though it institutionalizes a period of informality before regularization.

Stakeholders acknowledged recent regulatory reforms (the new *Reglamento de Extranjería*) that seek to improve *arraigo's* structure. However, concerns remain about variability in application across autonomous

communities, strict eligibility requirements (e.g., duration of residence, proof of family ties or employment), and administrative sluggishness, which undermine the system's responsiveness and create legal uncertainty.

Student Visas and Transition to Employment

While recent reforms aim to ease the transition from study to work, stakeholders note persistent administrative and legal barriers. SEPE and other institutions highlight reforms such as those included in the Startup Law (Ley de Startups) and the new *Reglamento de Extranjería*, which aim to simplify the process for foreign students to remain in Spain for employment after graduation. These include provisions for longer-term permits and automatic work rights during studies. However, stakeholders also noted that visa approval at the country of origin remains challenging, pointing to limited consular capacity as a bottleneck. Student permits often do not align with labor market demands (e.g., they restrict working hours to 30 per week, which many companies find incompatible with full-time hiring). The process of transitioning from a student visa to a full work permit remains bureaucratically complex, especially for SMEs unfamiliar with the procedures.

Work Visas and the Catalogue of Hard-to-Fill Occupations

Work visas, which are mostly based on the Catalogue of Hard-to-Fill Occupations, are viewed as necessary in theory but limited in practice due to administrative burdens and misalignment with labor market needs. Work visas for non-EU nationals in Spain are generally issued through the "initial authorization for temporary residence and employment".[58] For this authorization to be granted, the occupation with which it is associated must either be included in the Catalogue of Hard-to-Fill Occupations or the employer must demonstrate an inability to recruit from within the national labor market. As such, occupations listed in the catalogue serve as the main fast-track channel for hiring foreign workers, while all others require a separate process that is often seen as cumbersome and uncertain. SEPE affirmed that granting work visas to address documented labor shortages remains a cornerstone of Spain's migration policy, and that these visas are particularly important in sectors like construction, hospitality, and IT. There is broad agreement among the consulted stakeholders that the Catalogue of Hard-to-Fill Occupations – which is rooted in social dialogue and is the product of a complex tripartite negotiation – provides a solid institutional foundation, and that there is now room to broaden its scope and coverage, as well as streamline update cycles, so it can reflect changes in labor demand more swiftly. Several issues were identified:

- The catalogue includes few occupations, including football coaches and ship crew workers, and does not reflect shortages in widely recognized areas like construction, caregiving, and transport.
- Updates to the catalog are often deemed slow and constrained by the institutional validation process, which is mandated by law. In this process, differing priorities among social partners, including unions' concerns for job opportunities for nationals, may contribute to cautious expansion of the listing, and decisions may not always fully reflect evolving labor demand evidence.
- If an occupation is not on the list, employers must obtain a "certificate of insufficiency" to hire foreign workers (through hiring in the origin country), seen as an onerous and unreliable process.

These bottlenecks discourage employers from pursuing formal hiring through the catalogue, undermining the potential relevance that work visas could have. Employers end up relying more on informal hires or wait for candidates to formalize their immigration status through *arraigo*. Planned updates to the catalogue under the new regulation, including quarterly revisions and statistical indicators, were seen as a step

[58] Ministerio de Inclusión, Seguridad Social y Migraciones. (2025). Autorización inicial de residencia temporal y trabajo por cuenta ajena.

forward, though stakeholders cautioned that governance and political buy-in may remain key obstacles to implementation. In this context, the COL presents a compelling alternative. By offering a more evidence-based and transparent identification of labor shortages, the COL could serve as a more effective foundation for informing education and migration policies. Box 3 provides a comparative overview of the current catalogue and the COL findings.

Box 3: Comparing results with Spain's catalogue of hard-to-fill occupations

A comparison between Spain's official Catalogue of Hard-to-Fill Occupations and the COL constructed in this report illustrates many of the limitations that stakeholders repeatedly raised during the bottom-up analysis. In the catalogue for the second trimester of 2024, only 12 occupations are identified as hard-to-fill in one or more of Spain's provinces:

- 8343 - Crane, hoist and related plant operators (178 provinces)
- 3151 - Ships' engineers (158 provinces)
- 8350 - Ships' deck crews and related workers (128 provinces)
- 7411 - Building and related electricians (116 provinces)
- 7115 - Carpenters and joiners (115 provinces)
- 5111 - Travel attendants and travel stewards (96 provinces)
- 8182 - Steam engine and boiler operators (65 provinces)
- 3152 - Ships' deck officers and pilots (64 provinces)
- 3421 - Athletes and sports players (58 provinces)
- 3422 - Sports coaches, instructors and officials (58 provinces)
- 5120 – Cooks (32 provinces)
- 3522 - Telecommunications engineering technicians (31 provinces)

These occupations are heavily concentrated in few main areas: maritime, transport, sports, and specialized machinery operation. This limited sectoral scope contrasts sharply with the broader range of occupational shortages identified through the COL methodology. While some overlap exists – such as cooks (5120), electricians (7411), and carpenters (7115) – the catalogue omits many of the roles most frequently cited by employers and institutional stakeholders as difficult to fill. Conversely, most of the occupations currently listed in the catalogue do not appear in the final COL, suggesting a misalignment between the catalogue's contents and actual labor market signals gathered during the research.

Notably, the catalogue contains no occupations in healthcare, education, care, cleaning, or other key sectors in which strong and consistent recruitment challenges were documented throughout the qualitative consultations of the COL methodology. This stark mismatch highlights the catalogue's limited scope and evidentiary constraints. In contrast, the COL – by combining quantitative indicators and direct employer input – offers a more comprehensive, responsive, transparent, and policy-relevant tool for identifying labor shortages and informing migration planning across Spain's economy.

Highly Skilled Migration Pathways

Spain has taken concrete steps to attract highly qualified professionals, particularly in STEM fields, although challenges persist in salary competitiveness and integration. Stakeholders acknowledged targeted strategies aimed at high-skill migration, including:

- Regulatory reforms such as the **Startup Law**, which introduces tax benefits and simplifies administrative procedures to support the creation and growth of startups.
- Introduction of a **digital nomad visa**, designed to attract foreign entrepreneurs and remote workers to Spain.
- **Education-to-employment pathways** that allow foreign students to remain in Spain after graduation.
- **Investments in digital skills training** (e.g., through Red.es and the National Digital Skills Plan), partnerships between universities and industry, and joint training initiatives in renewables and digital sectors.
- **Private sector recruitment strategies** focused on flexibility, remote work, and workplace well-being.

However, attracting and retaining highly skilled workers remain difficult. According to some of the stakeholders, the main barrier in the case of highly qualified individuals is not visa issuance, which is relatively fast for high-skilled permits, but rather salary competitiveness and limited non-wage benefits. Stakeholders consider Spain to still lag its peer countries in offering flexible work arrangements, such as hybrid and remote work, which are often essential for retaining globally mobile professionals.

4.2.2 Institutional Bottlenecks and Regulatory Barriers

Stakeholders consulted across public and private institutions identified a range of persistent obstacles undermining the effectiveness of Spain's labor migration policy framework. While recent reforms have introduced important improvements, several core barriers continue to restrict access to formal migration pathways and hinder the labor market integration of migrant workers. These challenges include:

- **Slow and complex administrative procedures:** One of the most frequently cited bottlenecks is the slowness and complexity of administrative processes involved in obtaining, renewing, or transitioning between residence and work permits. Stakeholders pointed towards significant backlogs in both domestic migration offices and Spanish consulates abroad, with consular capacity viewed as insufficient to meet visa demands. The slow pace of documentation processing hinders timely access to the labor market.
- **Overreliance on reactive regularization mechanisms:** The *arraigo* system, especially *arraigo para la formación*, was consistently described as essential to integrating migrants already present in Spain. However, stakeholders emphasized that its prominence stems from the absence of sufficient *ex ante* legal channels for labor migration. Many migrants enter visa-free and regularize their immigration status later, creating a de facto migration pathway that depends on informality and extended waiting periods. While effective in practice, this approach was viewed as structurally inefficient and legally precarious.
- **Recognition of foreign qualifications:** The homologation and equivalence processes for foreign academic and technical credentials were unanimously identified as a critical barrier. The procedures are widely viewed as opaque, bureaucratic, and under-resourced, resulting in long delays. This prevents several qualified migrants from accessing professions that require a recognized qualification. Stakeholders stressed that overqualification and skill underutilization are

common consequences, undermining both labor market efficiency and individual career trajectories.

- **Underperforming migration instruments:** Key migration tools, particularly the Catalogue of Hard-to-Fill Occupations, were criticized for lacking relevance and responsiveness. The catalogue's limited coverage excludes many clearly understaffed sectors (e.g., agriculture, caregiving, logistics) and remains heavily constrained by political dynamics within the tripartite commission. Employers must resort to burdensome "certificates of insufficiency" to hire foreign workers for roles not included in the catalogue, deterring legal hiring in high-demand sectors. Similarly, while GECCO has proven effective in very specific agricultural settings, it must be adapted if it is to help meet labor needs in additional sectors.
- **Lack of inter-institutional coordination:** Another recurrent theme was the fragmentation of governance across the various ministries, autonomous communities, and municipal bodies involved in migration management. Stakeholders reported grey areas in terms of mandates, inconsistencies in how policies are applied across regions, and difficulties aligning migration policy with active labor market programs. Coordination challenges are particularly acute in integration services and in reconciling labor policy (under the Ministry of Labor) with immigration control (under the Ministry of Interior).
- **Rigid regulatory frameworks:** Several institutional actors noted that current migration laws and procedures lack the flexibility needed to respond to dynamic labor market conditions. This includes difficulties in fast-tracking permits for sectors with urgent labor needs, inflexible hiring requirements, and rigid timelines for documentation submission. Waiting periods for residency and nationality were also cited as excessively long.
- **Negative public narratives:** Finally, stakeholders flagged that public perceptions and media discourse around migration – particularly from Latin America – can influence policy hesitancy and administrative caution. Concerns about a "call effect" or visa overstays have shaped institutional priorities, even when regularized, structured migration is acknowledged to be in Spain's economic interest.

These institutional assessments of administrative complexity, slow credential recognition, and rigid legal pathways **closely mirror the challenges raised by employers** during sectoral consultations, reinforcing the consistency of the evidence across stakeholder groups.

4.2.3 The Strategic Role of Migration from Latin America

Many stakeholders expressed confidence that increased migration from Latin America could serve as a viable and mutually beneficial solution to Spain's demographic and labor market challenges. Reasons included:

- **Strong cultural and linguistic ties**, which support faster social and workplace integration;
- A generally **high educational profile** among Latin American migrants, especially youth;
- A **willingness to relocate and contribute demographically** (e.g., through family formation);
- A **strong work ethic** and **high levels of responsibility** noted by employers across multiple sectors;
- **Pre-existing diaspora support networks**, which reduce integration costs and improve retention.

Stakeholders also pointed to opportunities arising from changing geopolitical conditions, such as more restrictive policies in other traditional destination countries, as an incentive for Spain to position itself as a destination of choice.

A forward-looking theme emerging from the consultations was the potential role of GSPs or similar models as part of Spain's long-term labor migration strategy. Institutional stakeholders expressed strong conceptual and strategic support for GSPs, including a description of GSPs as a promising migration management tool that should be piloted and scaled in sectors with identified labor shortages. GSPs were seen as potentially more adaptive when compared to existing circular migration pathways, especially in middle- and high-skilled occupations, and more likely to offer predictability, legal security, and integration readiness for migrants. Stakeholders advocated for pathways that include:

i. **Defined sectoral training tracks**, tailored to the Spanish labor market needs;
ii. **Upstream training and certification** in the country of origin, including language and cultural preparation;
iii. **Active participation of the private sector** in shaping curricula and validating competencies;
iv. **Public-private dialogue mechanisms** to align incentives and responsibilities;
v. A focus on **bilateral collaboration and mutual benefit**.

4.3 Migrant Associations and the Integration of Latin American Communities in Spain

Migrant associations play a foundational role in supporting the economic, social, and legal integration of Latin American migrants in Spain. These organizations, often led and managed by migrants themselves, operate at the intersection of grassroots support and institutional advocacy. Their work addresses a wide range of migrant needs, from legal documentation and job placement to political representation and cultural integration. In doing so, they fill critical gaps in formal service provision and serve as a trusted point of access, particularly for newly arrived or irregular migrants navigating Spain's complex regulatory environment.

Through interviews with representatives from two prominent migrant associations in Spain (one Colombian and one Ecuadorian), this study identified several ways in which these organizations support labor market access. Their activities include orientation and reception services; training and job intermediation; legal assistance for regularization and credential recognition; political advocacy at the local, national, and European levels; and psychosocial support through community-building and cultural activities. Some also facilitate the certification of skills gained through informal labor or previous training, a particularly relevant tool for accessing formal employment in care, logistics, and hospitality. However, despite their high demand and social relevance, these associations often operate under significant resource constraints and face challenges in scaling their services to match the growing needs of the migrant population.

At the same time, migrant associations offer a distinct and sometimes critical view of existing migration policies. They describe persistent legal and institutional barriers, particularly those linked to the slow homologation of academic degrees, the limitations of the Catalogue of Hard-to-Fill Occupations, and the lack of coordination between origin and destination countries. They also raise concerns over ageism, racial profiling, and the long periods of irregularity migrants face before becoming eligible for legal residence.

Their testimonies highlight a systemic mismatch between migrants' skills and the jobs they are able to access, resulting in widespread overqualification and concentration in low-paid, informal sectors – particularly those with a high proportion of female workers, such as domestic work, care, and, in some instances, agriculture. These insights reinforce the importance of including migrant-led organizations in migration policy dialogues and labor market planning processes.

Diaspora networks, both formalized associations and informal support structures, play a crucial role in shaping the migration experience and enhancing the socioeconomic inclusion of migrants. The findings suggest that these networks serve as both a bridge and a buffer: they connect migrants to critical resources and institutions while also providing cultural affirmation, emotional support, and practical guidance in navigating the Spanish system. Many associations work closely with national and regional administrations, while also participating in international cooperation platforms, including those linked to the Global Compact for Safe, Orderly, and Regular Migration (GCM) and the European Pact on Migration and Asylum. Their role is particularly pronounced in three domains:

i. They offer **legal and administrative guidance**, particularly around regularization processes and labor rights.

ii. They enable labor insertion through **targeted vocational training**, **certification assistance**, and **partnerships with local authorities** (e.g., supporting certification in the elder care sector or offering warehouse operation courses).

iii. Third, they help **build community** through cultural programs and psychological support, which is especially valuable in combating isolation and discrimination.

Despite their impact, diaspora networks are often under-recognized in formal migration frameworks. Stakeholders from the associations consulted underscored their limited inclusion in the design of migration programs and criticized the absence of meaningful consultation in shaping mechanisms such as circular migration or the contents of the occupation catalogue. They stressed the need for co-responsibility between Spain and origin countries, not only to prepare migrants before departure (e.g., training, documentation, pre-migration orientation), but also to ensure dignified reintegration pathways for returnees. Migrant associations are well-positioned to support both objectives, and they call for stronger institutional partnerships and investment to scale up their work.

Taken together, the findings in this section point to a clear opportunity: **recognizing migrant associations and diaspora networks not only as service providers but also as strategic stakeholders in shaping fairer, more effective labor migration systems**. Their embedded knowledge, trust-based access, and long-term engagement with migrant communities position them as essential partners in any future skills partnership or labor mobility initiative between Spain and Latin America.

CHAPTER 5: POLICY RECOMMENDATIONS

Several priority areas for reform in Spain's labor migration system arise from the findings, which can ensure that it is better aligned with the country's current and future labor market needs. While recent reforms, particularly those included new Reglamento de Extranjería, were broadly welcomed, the findings suggest that significant gaps remain in the accessibility, responsiveness, and governance of labor migration pathways. This sub-section synthesizes recommendations in this regard, drawing attention to both short-term administrative fixes and longer-term strategic directions, including the potential role of bilateral partnerships with countries of origin.

1. Reforming Labor Market Diagnostics and Demand Identification Mechanisms

A central recommendation is to strengthen the tools used to identify labor shortages and inform labor migration policy. Improving labor market diagnosis would provide a more accurate picture of Spain's evolving workforce needs and strengthen the strategic use of migration to complement domestic training and activation efforts. The Catalogue of Hard-to-Fill Occupations remains the primary reference instrument for facilitating employment-based migration, but stakeholders suggest it would benefit from broader coverage, more frequent updates, and closer alignment with current labor demand. The current tripartite negotiation process, while intended to ensure consensus, has been reported by consulted stakeholders to result in limited responsiveness, especially where union concerns about the availability of national labor hinder the inclusion of occupations flagged by employers or regional authorities. Moreover, efforts led by some Autonomous Communities often lose momentum when escalated to the national level, resulting in stalled visa pathways. Addressing these bottlenecks requires reinforcing coordination between regional and national institutions and reconsidering the governance structure surrounding catalogue decisions.

To overcome these limitations, it is recommended that Spain establish a modernized and regularly updated COL, building on the top-down and bottom-up methodology used in this study and other global examples. This evidence-based approach combines labor market statistics with employer feedback and could serve as an official instrument to support both international recruitment and workforce planning. The present methodology can be further improved with region-level analyses and a broader systemic approach to bottom-up consultations through surveys or opens call for nominations for critical occupations.

A standing expert working group could be created – involving SEPE, regional employment services, and sectoral actors – to construct and regularly update a standardized and transparent COL. This group would define indicators and inclusion thresholds, review indicators in real-time, conduct consultations with

employers and other stakeholders, and ensure a consistent and transparent methodology. Publishing the underlying criteria and data sources would increase trust in the instrument. Countries such as Australia, the United Kingdom, Canada, Ireland, and Malaysia all maintain standing expert bodies that implement this function, presenting useful examples for how COLs can be constructed, regularly updated, and used to inform education, training, and migration planning needs.

Importantly, an improved COL procedure should consider subnational labor market needs. A subnational COL was not pursued in this report given data limitations and the time required to conduct regional stakeholder consultations. However, an analysis in the Annex shows substantial variation in sector needs, aging trends, and migrant profiles across Autonomous Communities, highlighting the importance of exploring possibilities for subnational COLs to inform region-level programs and policies.

2. Leveraging the Catalogue of Hard-to-Fill Occupations as a Tool for Regularization

In addition to guiding recruitment from abroad, the Catalogue of Hard-to-Fill Occupations could play a more strategic role in supporting the regularization of migrants already residing irregularly in Spain. Many migrants working informally are already engaged in occupations for which labor shortages are well documented, and many others would desire to be employed but face challenges in securing work due to being in the country informally. Using an improved and more comprehensive version of the Catalogue as a reference to prioritize regularization pathways could help address labor market bottlenecks while improving legal certainty and social protection for workers. To operationalize this, the Catalogue could be formally incorporated as a reference instrument in regularization mechanisms such as *arraigo sociolaboral* or used to define priority occupations under any future regularization programs. This approach would not only align with Spain's economic needs but also enhance the efficiency and coherence of its migration system by facilitating the transition from informality to formality in high-need sectors. To be effective, such a policy would require safeguards to avoid reinforcing precariousness – such as minimum employment standards and fast-tracked social security enrolment – and must be accompanied by clear guidelines and transparent procedures for both employers and workers.

3. Simplifying and Accelerating Administrative Procedures

One of the most consistent areas of concern highlighted by the analysis was the slowness and complexity of migration-related administrative processes, including both international and domestic procedures. These inefficiencies not only hinder the timely recruitment of migrant workers but also undermine the broader effectiveness of Spain's labor migration framework. To address these challenges, a set of administrative reforms would be recommended, aimed at improving institutional responsiveness and legal certainty. First, it is essential to accelerate the processing of residence and work permits, particularly for initial applications and renewals, through digitalization and procedural streamlining – this could include investment in interoperable digital systems that can be used by different institutions or administrative units, efficient online appointment scheduling, and status-tracking portals, for instance. It is important that technological advancements are leveraged to ensure that public services in general, and migration services in particular, are integrated into simple and easy-to-navigate digital platforms. Second, expanding the operational capacity of Spanish consulates abroad, especially in Latin America, could significantly enhance access to legal migration channels. This could include targeted increases in consular staff during high-volume periods and the rollout of remote application tools to facilitate access from rural or underserved areas. Within Spain, the *Oficinas de Extranjería*, which are the statal offices responsible for processing immigration-related procedures and permits, could be modernized through investment in digital infrastructure and increased staffing, in order to reduce delays and improve service delivery. Lastly, greater clarity and harmonization of procedures across autonomous communities can reduce territorial disparities

and ensure equitable treatment of applicants regardless of their region of residence. This may involve issuing unified procedural guidelines, hosting regular coordination forums across regional administrations, and monitoring disparities in processing times and rejection rates to ensure consistent implementation of national policy.

4. Developing More Flexible and Predictive Legal Pathways

A more forward-looking labor migration policy framework could benefit from the development of flexible and predictive legal pathways that reduce reliance on reactive regularization mechanisms such as *arraigo*. Rather than waiting for labor shortages to manifest or for migrants to regularize their status after arrival, Spain could proactively expand legal entry routes that anticipate demographic and labor market needs. While the recent extension of the job search visa period from 3 to 12 months, under the new Reglamento de Extranjería (approved in November 2024), represents a positive step in this direction, additional measures could further enhance the predictiveness and responsiveness of legal migration channels. In particular, bilateral labor mobility agreements could be tailored to priority sectors and co-designed with employers to improve job-matching outcomes and ensure training relevance in origin countries. In this context, GSPs represent a promising mechanism to align workforce development in origin countries with employment opportunities in Spain, creating mutually beneficial outcomes while supporting orderly and regulated migration.

5. Improving the Recognition of Foreign Skills and Qualifications

Improving the recognition of foreign qualifications and skills is critical to addressing the underutilization of migrant talent in Spain. Lengthy and complex homologation procedures currently prevent qualified professionals from accessing roles that match their training, particularly in sectors such as healthcare, education, and engineering. To better harness the skills of migrant workers, more agile and transparent mechanisms are needed to validate both formal credentials and prior work experience. Streamlining these processes would facilitate faster labor market integration, reduce overqualification, and ensure that skilled migrants contribute at levels commensurate with their abilities. In parallel, further investments in micro-credentials – aligned with the 2022 Council Recommendation on a European approach – could offer flexible pathways for migrants to supplement or update their qualifications in a modular way.[59] These short-form certifications, if linked to national qualification frameworks and recognized by employers, could support personalized upskilling while enabling quicker labor market access.

6. Enhancing Inter-Institutional and Territorial Coordination

Spain's multilevel governance structure requires more effective coordination mechanisms to ensure the coherent design and implementation of labor migration and integration policies. Clearer role delineation and stronger collaboration between national, regional, and municipal authorities are essential to minimize duplication and enhance policy responsiveness. Additionally, closer alignment between migration and employment policies, particularly in the planning and delivery of active labor market measures, could improve support for both migrants and employers. A more structured engagement with key non-governmental actors, including unions, employer organizations, training institutions, and diaspora associations, is also recommended to ensure that labor mobility strategies reflect local labor market realities and benefit from the full range of institutional expertise.

[59] European Commission. (2024). A European approach to micro-credentials. Available at: https://education.ec.europa.eu/education-levels/higher-education/micro-credentials

7. Strengthening the Alignment Between Education, Training, and Labor Market Needs

Strengthening the alignment between Spain's education and training systems and the needs of its labor market is essential to reduce skill mismatches and improve labor market outcomes for both native and migrant workers. The analysis suggests that there remains a persistent disconnect between the qualifications currently offered in Spain, particularly in technical and digital fields, and the profiles most in demand by employers. The continued evolution of the vocational training system toward a more dual model that integrates classroom instruction with workplace experience is a promising step, but further progress is needed. This includes improving the diagnosis of labor shortages at both the sectoral and territorial levels, fostering stronger connections between different levels of education, and expanding access to modular or short-cycle training. For migrants, targeted efforts to strengthen Spanish language and digital literacy are also crucial to facilitate both labor market integration and broader social inclusion.

ANNEXES

A.1 Top-Down Analysis: Complementary Tables and Figures

Figure 6: Mean annual wages by occupation: Lightcast vs. ECV (2018–2024)

Figure 7: Minimum experience required in job postings vs. reported experience in ECV (2018–2024)

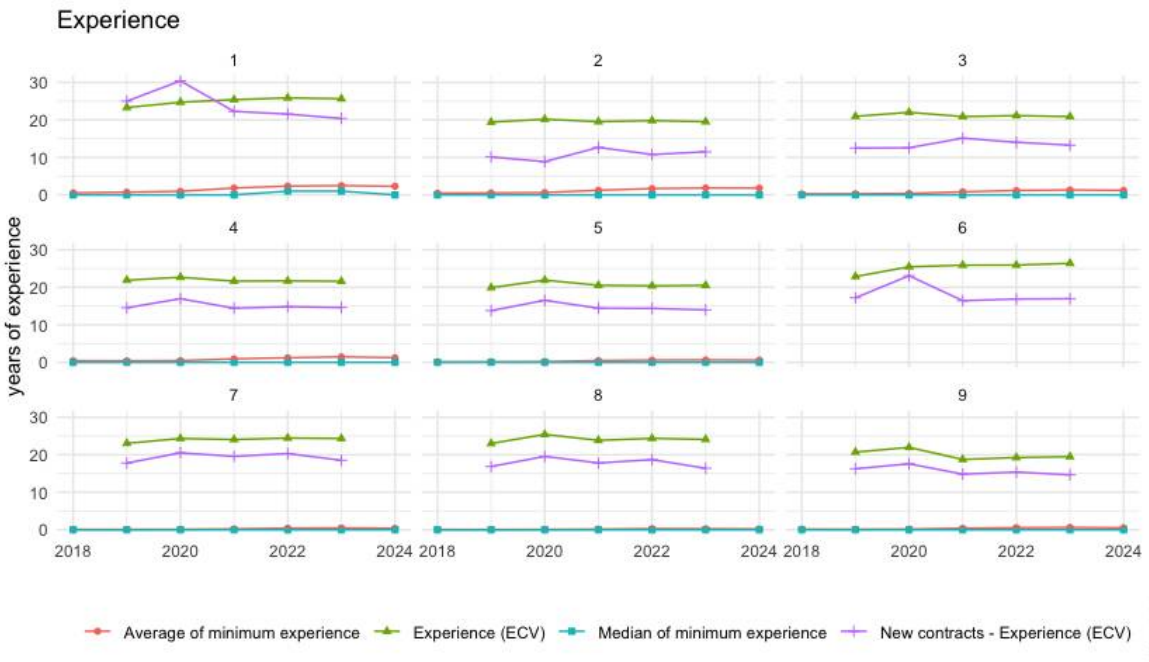


Table 18: Foreign worker indicators

Indicator	Source	Time Frame	Unit
New contracts for foreign workers	SEPE	2024	Absolute value
Change in new contracts for foreign workers	SEPE	2024 vs. 2023 and 2024 vs 2021	Percentage

Table 19: Robustness check: Adjustments to top-down list after including foreign worker indicators

Occupations added with inclusion of foreign worker indicators	
ISCO-08	**Occupation Title**
1222	Advertising and public relations managers
2222	Midwifery professionals
2263	Environmental and occupational health and hygiene professionals
2266	Audiologists and speech therapists
3118	Draughtspersons
3230	Traditional and complementary medicine associate professionals

3312	Credit and loans officers
4312	Statistical, finance and insurance clerks
5113	Travel guides
5311	Childcare workers
5329	Personal care workers in health services not elsewhere classified
5419	Protective services workers not elsewhere classified
7211	Metal molders and coremakers
8160	Food and related products machine operators
9629	Elementary workers not elsewhere classified
Occupations removed with inclusion of foreign worker indicators	
ISCO-08	**Occupation Title**
1219	Business services and administration managers not elsewhere classified
1321	Manufacturing managers
2221	Nursing professionals
2310	University and higher education teachers
2320	Vocational education teachers
2351	Education methods specialists
2359	Teaching professionals not elsewhere classified
5414	Security guards
6210	Forestry and related workers
7111	House builders
8350	Ships' deck crews and related workers

Table 20: Adjustments to top-down list after changing threshold values

Occupations added after reducing threshold to 70th percentile & median+45%	
ISCO-08	**Occupation Title**
1222	Advertising and public relations managers
1411	Hotel managers
1431	Sports, recreation and cultural center managers
2133	Environmental protection professionals
2144	Mechanical engineers
2149	Engineering professionals not elsewhere classified
2263	Environmental and occupational health and hygiene professionals
2269	Health professionals not elsewhere classified
2622	Librarians and related information professionals
2634	Psychologists
2654	Film, stage and related directors and producers
2659	Creative and performing artists not elsewhere classified
3359	Regulatory government associate professionals not elsewhere classified

3432	Interior designers and decorators
3434	Chefs
3521	Broadcasting and audio-visual technicians
4312	Statistical, finance and insurance clerks
5151	Cleaning and housekeeping supervisors in offices, hotels and other establishments
5419	Protective services workers not elsewhere classified
7319	Handicraft workers not elsewhere classified
8160	Food and related products machine operators
8183	Packing, bottling and labelling machine operators
8312	Railway brake, signal and switch operators
9122	Vehicle cleaners
9212	Livestock farm laborers
9331	Hand and pedal vehicle drivers
Occupations removed after increasing threshold to 80th percentile & median+55%	
1219	Business services and administration managers not elsewhere classified
1321	Manufacturing managers
1330	Information and communications technology service managers
2112	Meteorologists
2250	Veterinarians
2412	Financial and investment advisers
2431	Advertising and marketing professionals
2432	Public relations professionals
2652	Musicians, singers and composers
3115	Mechanical engineering technicians
3123	Construction supervisors
5132	Bartenders
6222	Inland and coastal waters fishery workers
7323	Print finishing and binding workers

Table 21: Number and share of indicators flagged for each occupation in the top-down list

ISCO-08	Occupation Title	Indicators flagged	Indicators available	Share flagged
1211	Finance managers	9	16	56.3%
1212	Human resource managers	9	16	56.3%
1219	Business services and administration managers not elsewhere classified	8	16	50.0%
1223	Research and development managers	8	13	61.5%
1321	Manufacturing managers	8	16	50.0%

1330	Information and communications technology service managers	7	13	53.8%
1343	Aged care services managers	11	16	68.8%
1344	Social welfare managers	9	14	64.3%
1345	Education managers	10	16	62.5%
2112	Meteorologists	8	16	50.0%
2114	Geologists and geophysicists	7	13	53.8%
2162	Landscape architects	5	8	62.5%
2211	Generalist medical practitioners	10	16	62.5%
2212	Specialist medical practitioners	5	8	62.5%
2221	Nursing professionals	7	14	50.0%
2250	Veterinarians	8	16	50.0%
2264	Physiotherapists	8	14	57.1%
2310	University and higher education teachers	7	14	50.0%
2320	Vocational education teachers	7	14	50.0%
2330	Secondary education teachers	7	14	50.0%
2341	Primary school teachers	7	11	63.6%
2342	Early childhood educators	8	14	57.1%
2351	Education methods specialists	7	14	50.0%
2352	Special needs teachers	10	14	71.4%
2359	Teaching professionals not elsewhere classified	6	11	54.5%
2412	Financial and investment advisers	9	16	56.3%
2413	Financial analysts	10	16	62.5%
2421	Management and organization analysts	10	13	76.9%
2431	Advertising and marketing professionals	8	16	50.0%
2432	Public relations professionals	9	16	56.3%
2433	Technical and medical sales professionals (excluding ICT)	8	16	50.0%
2434	Information and communications technology sales professionals	8	16	50.0%
2529	Database and network professionals not elsewhere classified	7	13	53.8%
2611	Lawyers	10	16	62.5%
2652	Musicians, singers and composers	7	14	50.0%
2653	Dancers and choreographers	6	11	54.5%
3115	Mechanical engineering technicians	8	16	50.0%
3123	Construction supervisors	8	16	50.0%
3132	Incinerator and water treatment plant operators	11	16	68.8%
3154	Air traffic controllers	8	13	61.5%
3155	Air traffic safety electronics technicians	4	8	50.0%
3213	Pharmaceutical technicians and assistants	8	14	57.1%

3257	Environmental and occupational health inspectors and associates	9	16	56.3%
3258	Ambulance workers	9	16	56.3%
3314	Statistical, mathematical and related associate professionals	6	11	54.5%
3341	Office supervisors	9	16	56.3%
3422	Sports coaches, instructors and officials	6	11	54.5%
3435	Other artistic and cultural associate professionals	9	16	56.3%
3511	Information and communications technology operations technicians	9	16	56.3%
4211	Bank tellers and related clerks	10	16	62.5%
4212	Bookmakers, croupiers and related gaming workers	8	16	50.0%
4224	Hotel receptionists	9	16	56.3%
4229	Client information workers not elsewhere classified	8	16	50.0%
4323	Transport clerks	8	16	50.0%
4416	Personnel clerks	6	11	54.5%
5111	Travel attendants and travel stewards	8	16	50.0%
5120	Cooks	9	16	56.3%
5131	Waiters	8	16	50.0%
5132	Bartenders	8	16	50.0%
5152	Domestic housekeepers	8	14	57.1%
5163	Undertakers and embalmers	9	16	56.3%
5211	Stall and market salespersons	9	16	56.3%
5230	Cashiers and ticket clerks	8	16	50.0%
5245	Service station attendants	8	14	57.1%
5246	Food service counter attendants	10	16	62.5%
5249	Sales workers not elsewhere classified	11	16	68.8%
5312	Teachers' aides	10	14	71.4%
5322	Home-based personal care workers	6	11	54.5%
5411	Fire-fighters	5	8	62.5%
5413	Prison guards	7	13	53.8%
5414	Security guards	8	16	50.0%
6122	Poultry producers	6	8	75.0%
6129	Animal producers not elsewhere classified	4	8	50.0%
6130	Mixed crop and animal producers	4	8	50.0%
6210	Forestry and related workers	4	8	50.0%
6222	Inland and coastal waters fishery workers	4	8	50.0%
7111	House builders	8	16	50.0%
7231	Motor vehicle mechanics and repairers	8	16	50.0%
7232	Aircraft engine mechanics and repairers	8	13	61.5%
7323	Print finishing and binding workers	8	16	50.0%
7516	Tobacco preparers and tobacco products makers	6	11	54.5%

7549	Craft and related workers not elsewhere classified	6	8	75.0%
8121	Metal processing plant operators	10	16	62.5%
8157	Laundry machine operators	9	14	64.3%
8211	Mechanical machinery assemblers	8	16	50.0%
8311	Locomotive engine drivers	7	11	63.6%
8331	Bus and tram drivers	11	14	78.6%
8332	Heavy truck and lorry drivers	9	16	56.3%
8350	Ships' deck crews and related workers	8	16	50.0%
9129	Other cleaning workers	9	14	64.3%
9311	Mining and quarrying laborers	8	14	57.1%
9411	Fast food preparers	8	14	57.1%
9412	Kitchen helpers	8	14	57.1%
9611	Garbage and recycling collectors	7	11	63.6%
9621	Messengers, package deliverers and luggage porters	8	16	50.0%
9622	Odd job persons	9	16	56.3%

A.2 Bottom-Up Analysis: Complementary Information

A.2.1 FGD Protocol

GENERAL FGD QUESTIONS – ALL GROUPS

Recruiting Challenges (~35 minutes):

1. What are the general challenges you face in recruiting for your sector?
2. **What occupations/roles are hardest to fill in your companies/farms?** *[Dedicate 10-15 minutes for listing down all the occupations/roles the companies find very hard to fill.]*
3. What education qualifications are required for the roles that are hardest to fill?
4. What level(s) of experience are required for the roles that are hardest to fill?
5. What technical skills are most critical for the successful performance of these roles?
6. Beyond technical skills, what non-technical (soft) skills are important for these roles? (e.g., communication, teamwork, problem-solving)
7. What strategies has your industry/company employed to overcome these recruitment challenges?

Validation of Quantitative Findings – Critical Occupations List (~15 minutes):

Present the attached "List of Preliminary Critical Occupations" (List 1) (relevant to the sector/industry represented in the FGD) to participants. Then, discuss the following questions:

8. Do you consider that the occupations identified in the list align with those you find most difficult to recruit for in your sector?
9. Do you strongly disagree with the inclusion of any of the occupations identified in the list (e.g., do you strongly disagree that one or more of the listed occupations is hard to fill)? If yes, which one(s) and why?

Present the list "Occupations with a high increase in the number of foreign workers" (List 2) (relevant to the sector/industry in the FGD). *Non-applicable to Group 3 (Agriculture).*
Read the following: "Data shows that an increasing number of migrant workers has been hired for these positions in the last 4 years."
Then, discuss the following questions:

10. Do you consider that the occupations identified in the list are "hard-to-fill" / critical occupations in your sector?
11. Do you strongly disagree with including any of the occupations identified in the list (e.g., do you strongly disagree that one or more of the listed occupations is hard to fill)? If yes, which one(s) and why?

Migrant Workforce (~15 minutes):

Read to participants: "Now that we have discussed the specific challenges related to filling critical occupations, let's shift our focus to the inclusion of migrant workers, particularly from Latin America, and the evolving needs of your workforce. We are interested in your experiences and perspectives on hiring migrants from this region for these roles, the effectiveness of such strategies, and any anticipated changes in workforce requirements due to technological advancements or other factors."

12. Are you currently hiring migrant workers from Latin America for the hard-to-fill roles in your sector? If so, how effective has this strategy been?
13. What are the main barriers or challenges to hiring migrant workers from Latin America? (e.g., legal pathways, skill transferability).
14. Would you consider hiring workers from Colombia, Ecuador, or the Dominican Republic? What factors would influence your decision?
15. Are you aware of any existing circular migration programs, and have your company participated in any?

SECTOR-SPECIFIC QUESTIONS (~15 minutes):

All sectors:

16. What are the emerging occupations or roles in your sector that you anticipate will grow in demand in the future? *[Please list these]*
17. How do you plan to include migrants in these expanding areas?

Manufacturing (including industrial machinery):

- How is automation impacting your workforce needs?
- What type of specialized training programs are you implementing to upskill your workforce in response to technological advancements?

Construction, Installation, and Assemblers:

- How does seasonal demand affect your recruitment strategies and workforce management strategies?
- What innovations or technological changes are affecting your hiring needs? What type of training programs are being implemented to upskill the workforce?

Agriculture (including Livestock, Forestry, and Fishing):

- What are the unique challenges in recruiting for roles that require physical labor or expertise in agriculture?
- How do you manage the seasonal variability in labor demands?
- What kind of technological or policy changes are affecting your hiring needs? What kind of adaptations or training are being implemented to upskill your workforce as a response to these changes?

Restaurants and Customer Service (restaurants, food delivery):

- With the rise of digital platforms, how are your staffing needs changing?
- What specific training or adaptations are you implementing to respond to these changes and integrate migrant workers effectively into your workforce?

Scientific and Intellectual Services (ICT, finance, administrative roles):

- What emerging technologies or skills are now required that previously weren't?
- How is the emergence of technological advancement altering your hiring needs?
- What opportunities do you see for integrating international talent into your workforce? Are there particular roles where this integration has been beneficial or where you foresee potential benefits in the future?

Healthcare (e.g., doctors, nurses) and Education:

- What (if any) qualifications or certifications do you often find lacking in migrant workers or are challenging to officially recognize? How does this impact their recruitment?
- Are training programs available to fill the existing skills gaps, and are these effective in achieving this?

Care (elderly care, childcare – home and nursing-home based), Cleaning, and Housekeeping:

- What challenges do you face in recruiting and retaining staff in care roles, which often have high turnover rates?
- When integrating migrant workers into caregiving roles, how do you address challenges related to language barriers, cultural differences, and skill gaps?

Final Recommendations (~10 minutes):

18. What specific policies or programs (e.g., training, upskilling, migration pathways) do you believe would be most effective in addressing labor shortages in your sector?
19. How can the findings from this study be most useful to you and other stakeholders in your industry?

A.2.2 KII Protocol (Employer Representatives)

KII QUESTIONS

Hard-to-Fill Occupations (25 minutes):

1. **What occupations/roles are hardest to fill in your company?** *[Dedicate the initial 5 minutes for listing down all the occupations/roles the company finds very hard to fill.]*

For each occupation listed in [1], discuss the following questions:

2. For what reason(s) is this position hard to fill?
3. Can you give us an estimate of how many people you needed in this occupation/role last year and how many you were able to hire?
4. What education qualification is required for advertised positions in this role, including certifications and licenses?
5. What level(s) of experience are required for advertised positions in this role?
6. What technical skills are most critical for the successful performance of this role?
7. Beyond technical skills, what non-technical (soft) skills are important for this role? (e.g., communication, teamwork, problem-solving)
8. Have any recent regulatory changes impacted your ability to fill these roles? If so, how?
9. What are the strategies your industry/company has used to meet your labor needs for this position?
10. Is there other relevant information that supports the inclusion of this occupation on the Critical Occupations List?

Validation of Quantitative Findings – Critical Occupations List (10 minutes):

Present the attached "List of Preliminary Critical Occupations" (List 1) (relevant to the sector/industry represented in the KII) to participants. Then, discuss the following questions:

11. Do you consider that the occupations identified in the list align with those you find most difficult to recruit for in your sector?
12. Do you strongly disagree with the inclusion of any of the occupations identified in the list (e.g., do you strongly disagree that one or more of the listed occupations is hard to fill)? If yes, which one(s) and why? If yes, which one(s) and why?
13. Considering the list of occupations we have identified from our analysis, do you believe there are any critical roles that are notably absent or overlooked in our findings? If so, can you elaborate on which ones and the most relevant skills are needed for those?

Present the list "Occupations with a high increase in the number of foreign workers" (List 2) (relevant to the sector/industry in the FGD). *Non-applicable to Group 3 (Agriculture).*
Read the following: "Data shows that an increasing number of migrant workers has been hired for these positions in the last 4 years."
Then, discuss the following questions:

14. Do you consider that the occupations identified in the list are "hard-to-fill" / critical occupations in your sector?
15. Do you strongly disagree with including any of the occupations identified in the list (e.g., do you strongly disagree that one or more of the listed occupations is hard to fill)? If yes, which one(s) and why?

Migrant Workforce (15 minutes):

Read to participants: "Now that we have discussed the specific challenges related to filling critical occupations, let's shift our focus to the inclusion of migrant workers, particularly from Latin America, and the evolving needs of your workforce. We are interested in your experiences and perspectives on hiring migrants from this region for these roles, the effectiveness of such strategies, and any anticipated changes in workforce requirements due to technological advancements or other factors."

16. Are you currently hiring migrant workers from Latin America for these hard-to-fill roles? Which roles would you say you are hiring migrants for in particular? If so, how effective has this strategy been?
17. What are the main barriers or challenges to hiring migrant workers from Latin America? (e.g., legal pathways, skill transferability, language requirements) Do the challenges vary by role? If yes, please elaborate on how.
18. What initiatives, if any, does your company have in place to facilitate the cultural integration of migrant workers? Do you provide training to migrant workers to close any potential skill gaps?
19. Would you consider hiring workers from Colombia, Ecuador, or the Dominican Republic? If yes, which types of roles would you hire them for? What factors would influence your decision?

Future Workforce Needs (10 minutes):

20. Are there emerging occupations or roles in your sector that you anticipate will grow in demand in the future?
21. How do you plan to include migrants in these expanding areas?

22. How do you see technological changes, such as digitalization or automation, impacting workforce needs in your sector?
23. How does your company approach long-term workforce planning, given the potential shifts in the industry and labor market?
24. What specific training or reskilling programs would be most beneficial to prepare for these changes?

Final Recommendations:

25. What specific policies or programs (e.g., training, upskilling, migration pathways) do you believe would be most effective in addressing labor shortages in your sector?
26. How can the findings from this study be most useful to you and other stakeholders in your industry?

A.2.3 Consultation Protocol (Policymakers and Institutions)

KII QUESTIONS

Labor Market Trends:

1. Which economic sectors and occupations do you see as currently facing the most significant labor shortages in Spain?
2. What challenges does Spain face in meeting these labor needs domestically (i.e., without relying on migrant labor)?

Migration Policies:

3. How would you assess the impact of the migration pathways/policies outlined below in addressing labor shortages in strategic or high-demand sectors?
    a. The GECCO system for seasonal migration
    b. The "Arraigo" Regularization pathways (i.e., social reasons, family ties, employment and professional training)
    c. Integration of Students through Student Visas
    d. Integration of migrants with a Work Visa
    e. Integration of Highly Skilled Professionals
    f. Any other recent reforms (e.g., since 2022, approximately) that you are aware of.
4. What are the main challenges that you are aware of that are encountered in the implementation of these policies?
5. How do you assess the relevance and accuracy of the current Catalogues of Hard-to-Fill Occupations in reflecting the evolving needs of Spain's economy?
6. With forecasts suggesting a high demand for highly qualified workers in the future, are you aware of any specific strategies in place to attract and retain such talent (in sectors like STEM and renewable energy, for instance)?
7. To what extent does the recognition of foreign technical skill certifications pose a barrier to the migrant's access to work opportunities in Spain?

Economic Inclusion and Integration:

8. What strategies and programs are currently in place to facilitate the successful integration of migrant workers into Spain's labor market?
9. How effective have these strategies been in ensuring a smooth integration of migrant workers? Do you receive feedback from workers and/or from host companies that could be shared?
10. What are the primary barriers to the successful integration of these workers, and how can they be overcome?

Regional Economic Disparities:

11. How do you observe labor migration needs and strategies differing across Spain's autonomous communities – particularly in how labor migration can play a role in addressing local labor shortages (e.g., in Catalonia, Andalusia, or other regions)?

Policy Coordination and Recommendations:

12. What policy adjustments would you recommend (or highlight, if already implemented) to better align Spain's labor migration pathways with current and future labor market needs?
13. Looking ahead, do you see increased labor migration from Latin America as a viable long-term solution for meeting Spain's labor market needs? Why, or why not?
14. What steps could be taken to streamline bureaucratic processes involved in hiring migrant workers?
15. How do you believe Spain's educational and vocational training systems could be better aligned with the skills required in the labor market?
16. Are there specific measures not yet in place that could further enhance the economic and social inclusion of migrant workers in Spain's labor market?
17. How can the findings from this study be most useful to you and other stakeholders in your industry?

A.3 Additional Research Topic: Regional Labor Market Heterogeneity

Spain's labor market is characterized by regional disparities, shaped by differences in economic structure, demographic trends, and institutional capacities. Qualitative evidence from consultations with regional and national stakeholders consistently underscores that no single narrative captures the diversity of Spain's labor needs. Variations in sectoral specialization – such as the prominence of industry and technology in Catalonia and Madrid versus agriculture in Castilla la Mancha and Andalusia and hospitality in the Balearic Islands – translate into different labor market patterns. These patterns are further reinforced by demographic factors, including the aging of the population in inland provinces, as well as high youth unemployment in southern regions like Andalusia and Extremadura. The decentralized structure of Spain's governance, where labor market competencies are largely devolved to the autonomous communities while migration policy remains centralized, adds additional complexity in aligning supply and demand for labor at the regional level, particularly when aiming to address labor shortages with the support of migrant labor force.

Regional differences in Spain's labor market are clear, but data constraints require analyzing them at a more aggregated occupational level. While regional disparities are essential to understanding Spain's labor market, the available data from Lightcast and SEPE does not support constructing a full COL at the four-digit level for individual regions due to limited observations in some areas. Nevertheless, SEPE administrative records enable a meaningful analysis of regional trends in labor demand and supply at the two-digit occupational level. Although this provides a more aggregated perspective, it still highlights important differences across Spain's autonomous communities and serves as a valuable basis for targeted discussions on regional workforce needs.

A.3.1 Evidence from Labor Market Data: Regional Variation and Absorption Capacity

The analysis of SEPE data at the provincial level reveals visible geographic concentration in the country's main urban and coastal regions. SEPE data includes all registered new employment contracts and unemployed individuals, but its main limitation is not capturing informal labor market dynamics. The first map (Figure 8 below), which illustrates the number of new labor contracts registered by province, shows clear peaks in Madrid and Barcelona – Spain's two largest urban labor markets – followed by several southern and western coastal provinces in Andalusia and the Valencian Community. This pattern is closely mirrored in Figure 9, which presents the number of unemployed individuals, where Madrid and Barcelona again lead in absolute figures, with coastal provinces in Andalusia and Valencia also showing substantial levels. By contrast, much of inland Spain, including provinces associated with the so-called "Empty Spain" (España Vaciada[60]), exhibits relatively low absolute figures for both employment contracts and unemployment. While these maps underscore significant spatial disparities in labor market size and activity, they do not, on their own, provide specific evidence of regional imbalances in labor market shortages, as both variables reflect population density and labor market scale rather than scarcity or surplus. To interpret local dynamics more meaningfully, these absolute indicators must be complemented by relative measures, such as the ratio of new contracts to unemployed (the "job market absorption ratio" indicator, also used in

[60] The term "España Vaciada" has been coined to define the long-term trend of depopulation in Spain´s inland areas. See, for instance: Pazos-Vidal, , S. (2022). "Emptied Spain" and the limits of domestic and EU territorial mobilization. Revista Galega De Economía, 31(2), 1-28. https://doi.org/10.15304/rge.31.2.8365

the top-down analysis of the COL) which can reveal areas where labor demand is either outpacing or lagging behind the available workforce.

Figure 8: Number of new contracts by province (SEPE, 2024)

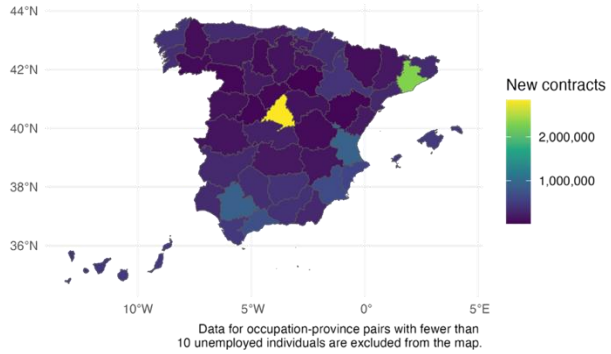
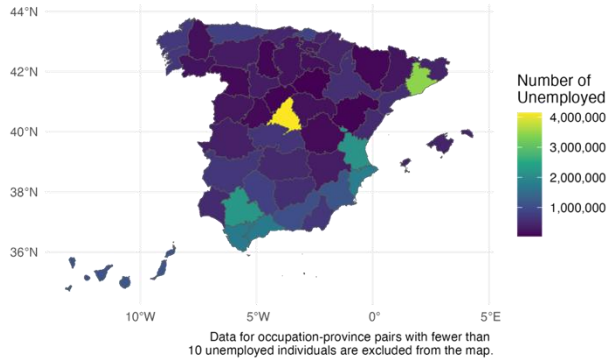
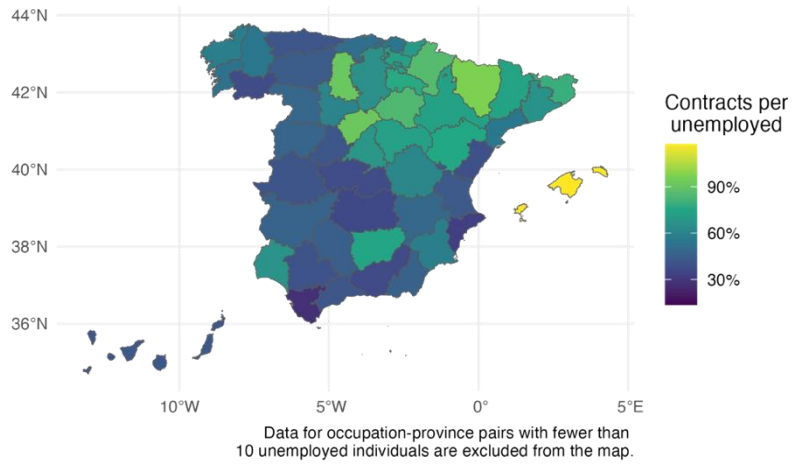


Figure 9: Number of unemployed by province (SEPE, 2024)



The ratio of new contracts to unemployed offers a more nuanced lens into regional labor market dynamics, highlighting disparities in labor absorption capacity that are not apparent from absolute figures alone. This indicator adjusts for the size of the unemployed population, providing insight into how effectively local labor markets are converting unemployment into job opportunities. Provinces with a higher ratio – as those in yellow and light green tones in Figure 10 – suggest stronger labor market absorption, where the number of new contracts closely matches the pool of unemployed workers. Notably, the Balearic Islands exhibit the highest ratio in the country, likely a reflection of their pronounced seasonality and tourism-driven economy, where intensive short-term hiring cycles create high contract volumes. Provinces in the north of Spain, including in Aragon, Navarre and the eastern part of Castile and León, also register relatively high ratios, indicator a higher labor market absorption.

Figure 10: Ratio of new contracts to unemployed by province (SEPE, 2024)



Conversely, many provinces in the interior and the eastern parts of the country present markedly low ratios, pointing to persistent challenges in labor market integration. These areas – visible in dark blue and purple hues in Figure 10 – include parts of Castilla y León, Asturias, Galicia, and Extremadura, where the number of unemployed individuals highly exceeds the number of new contracts. It is likely that these regions observe a mismatch between labor demand and supply. In Andalusia, located in the south-west of the country, there is a large variation in the ratio, with provinces like Huelva and Jaén presenting higher absorption rations than the rest of the Autonomous Community. While these figures may partly reflect demographic trends, such as aging and depopulation, they also suggest that job creation in these areas remains insufficient to absorb even the shrinking labor force, pointing to persistent misalignments between the types of jobs available and the characteristics of the local workforce.

Urban provinces such as Madrid and Barcelona, despite their large volumes of contracts and unemployed individuals, display moderate job absorption ratios. This may reflect a relatively balanced dynamic between labor supply and demand, given the scale and dynamic nature of these metropolitan labor markets. As economic hubs, both provinces attract large numbers of jobseekers – including recent graduates, internal migrants, and foreign nationals – while simultaneously generating high volumes of employment contracts across a wide range of sectors. In this context, a moderate ratio may suggest that job creation is keeping pace with inflows into unemployment, pointing to a degree of labor market fluidity. However, it may also mask underlying inefficiencies or structural issues. The prevalence of temporary contracts and high turnover in many sectors can inflate the number of contracts without substantially reducing unemployment. As such, while the ratio appears moderate, the coexistence of high unemployment and high contract issuance underscores the need to examine not only the quantity of hiring, but also its stability, inclusiveness, and alignment with the profile of the unemployed.

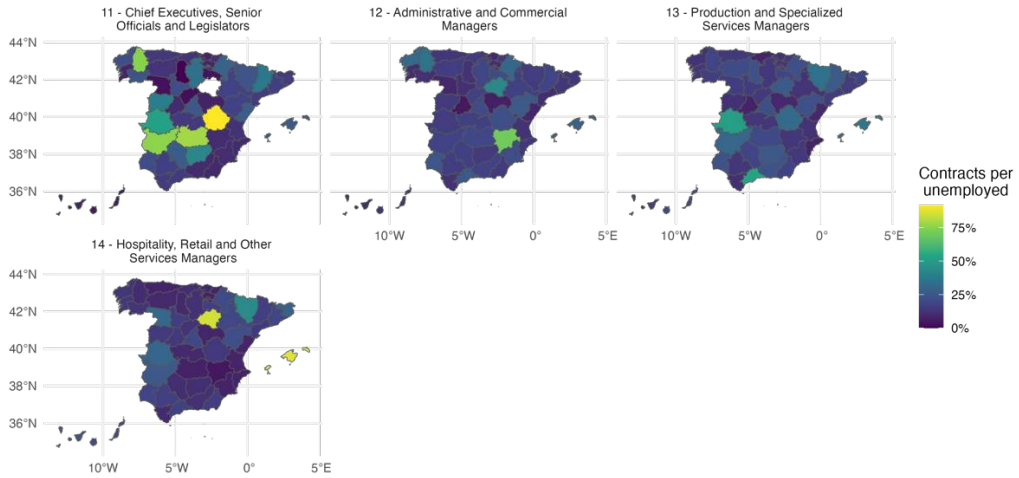
Overall, the heterogeneity observed across regions for the different indicators underscores the importance of a localized analysis in assessing labor shortages and guiding migration policy. A high job market absorption ratio does not necessarily indicate a thriving labor market – it may also reflect high turnover, short-term contracts, or seasonally driven hiring spikes, particularly in sectors like tourism and agriculture. Conversely, a low ratio may be symptomatic of structural unemployment, skills mismatches, or limited economic dynamism, rather than simply weak demand. This highlights the limitations of interpreting quantitative indicators in isolation. For this reason, it is essential to contextualize indicator values with qualitative insights, institutional capacity, and sectoral composition in each region.

A.3.2 Occupational-Level Patterns of Regional Absorption Capacity

This sub-section examines regional variation in labor market absorption capacity across occupational groups, using the ratio of new employment contracts to registered unemployment at the provincial level. The analysis is disaggregated by 1-digit and 2-digit ISCO-08 occupational codes to capture more granular patterns in hiring and labor availability across different types of work. While the ratio serves as a useful proxy for assessing demand relative to local labor supply, it should be interpreted with caution, as it may be influenced by factors such as contract turnover, informal employment, and occupational registration practices. The visualizations and analysis that follow provide a comparative overview of how absorption capacity varies across Spain for different occupational categories, offering insights into where mismatches may be more or less pronounced.[61]

Managers (ISCO-08 Group 1)

Figure 11: Job market absorption ratio by occupation and province (Group 1)



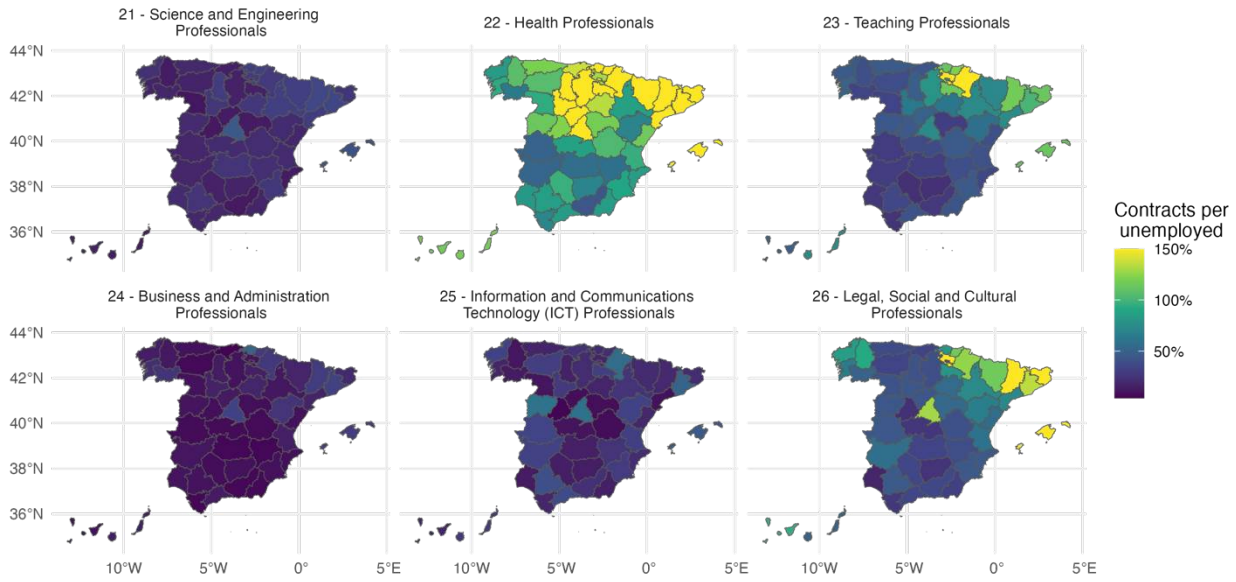
Occupations classified under ISCO-08 Group 1 – Managers – reveal heterogeneous patterns of labor market absorption across provinces when disaggregated by 2-digit occupational categories. The map in Figure 11 shows that hiring dynamics and demand for managerial roles differ considerably depending on the sector and function, with important regional implications. **Chief Executives, Senior Officials and Legislators (Group 11)** show relatively high absorption in inland provinces such as Extremadura and Castilla-La Mancha, potentially reflecting administrative recruitment patterns or lower levels of registered unemployment in senior roles. **Administrative and Commercial Managers (Group 12)** exhibit more uniform and generally lower absorption across the country, suggesting limited turnover or preference for internal promotion in these positions. **Production and Specialized Services Managers (Group 13)** also show modest absorption levels, with some localized peaks (e.g., Cáceres, Málaga), possibly tied to sector-specific dynamics or regional investments. In contrast, **Hospitality, Retail and Other Services Managers (Group 14)** stand out for

[61] In the graphs depicting the ratio of new contracts to unemployed individuals by occupation and province, the scale is capped at 150%. Values equal to or greater than 150% are grouped at the upper limit to improve the legibility of territorial patterns and avoid distortion caused by extreme outliers.

their very high absorption in the Balearic Islands, consistent with the strong tourism sector there, while other provinces exhibit more subdued patterns.

Professionals (ISCO-08 Group 2)

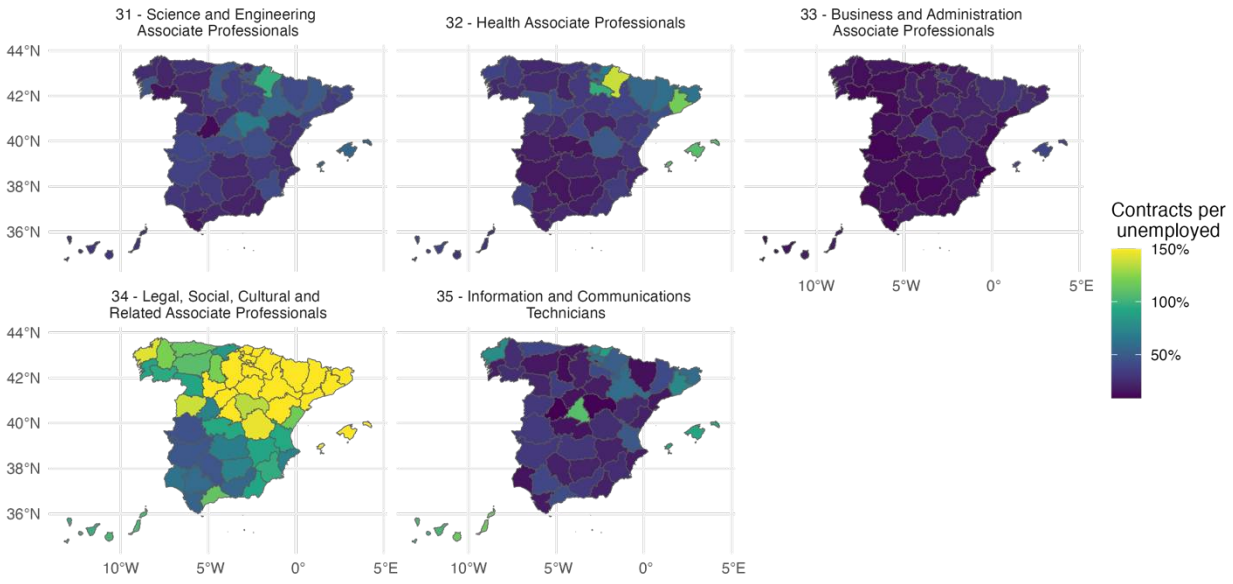
Figure 12: Job market absorption ratio by occupation and province (Group 2)



Labor absorption patterns among ISCO-08 Group 2 – Professionals – vary considerably by occupational category, revealing strong regional and sectoral dynamics (Figure 12). Absorption patterns reveal clear sectoral and territorial segmentation, with **Health (Group 22)** and **Teaching Professionals (Group 23)** showing the strongest regional concentration. Health professionals display the highest absorption ratios nationwide, particularly in the northern regions such as Castilla y León, the Basque Country, Navarra, and La Rioja, suggesting both elevated demand and recruitment challenges in public health services. Teaching professionals also show notable absorption in the northeast, including Catalonia and Navarra, while southern and western regions lag behind. In contrast, **Science and Engineering (Group 21)** and **Business and Administration Professionals (Group 24)** exhibit consistently low absorption across most provinces, possibly reflecting slower hiring cycles or oversupply of qualified candidates. **ICT Professionals (Group 25)** show slightly more varied patterns, with moderate absorption in tech hubs like Madrid and Catalonia, though overall demand appears limited outside major centers. **Legal, Social and Cultural Professionals (Group 26)** present a more heterogeneous pattern, with elevated ratios in urban and northeastern provinces, likely driven by institutional and cultural sector employment.

Technicians and Associate Professionals (ISCO-08 Group 3)

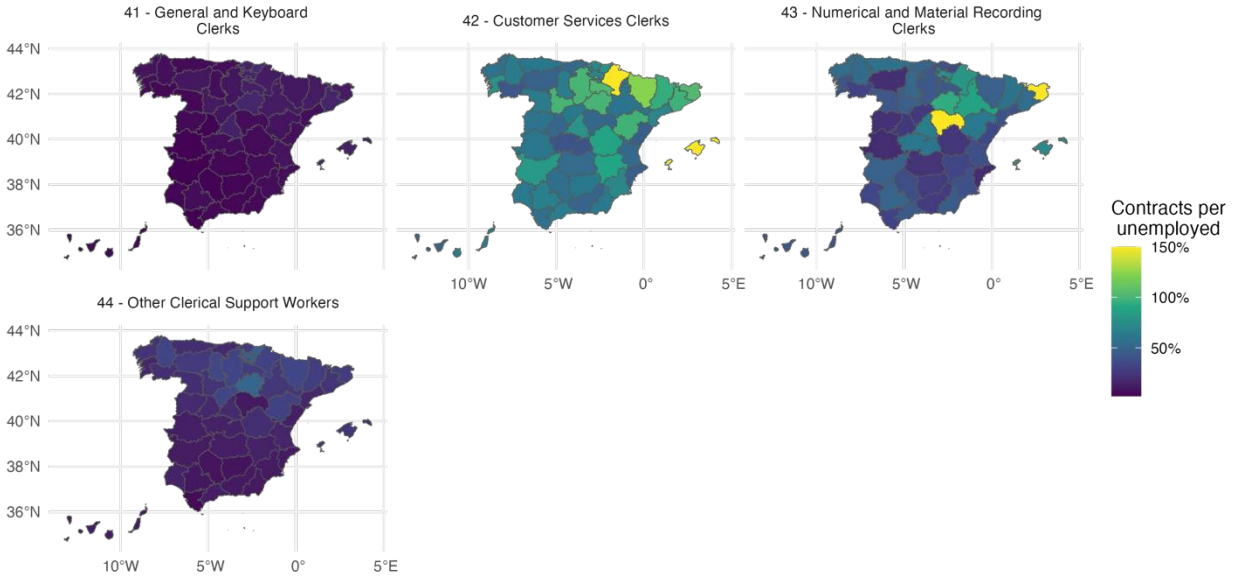
Figure 13: Job market absorption ratio by occupation and province (Group 3)



Technicians and associate professionals present different labor absorption patterns depending on the specific occupation, with a clear divide between technical, health-related, and clerical roles (Figure 13). Legal, Social, Cultural and Related Associate Professionals (Group 34) shows the most dynamic pattern, standing out for its exceptionally high absorption ratios in northern regions, particularly Catalonia, Navarra, La Rioja, and the Basque Country, likely reflecting local demand in para-legal, social, or cultural programming roles, though some spikes may be driven by small denominators. In contrast, **Business and Administration Associate Professionals (Group 33)** show uniformly low absorption across Spain, suggesting labor oversupply or stagnation in administrative technician hiring. **Health Associate Professionals (Group 32)** present more moderate absorption, with peaks in Navarra and parts of Catalonia, possibly tied to local health service investments. **Science and Engineering Associate Professionals (Group 31)** and **ICT Technicians (Group 35)** show modest but regionally varied patterns, with slightly higher ratios in provinces like Navarra and Madrid, respectively, though overall contract volumes remain limited. These patterns highlight both sector-specific imbalances and the potential for targeted regional workforce planning in mid-skilled technical roles.

Clerical Support Workers (ISCO-08 Group 4)

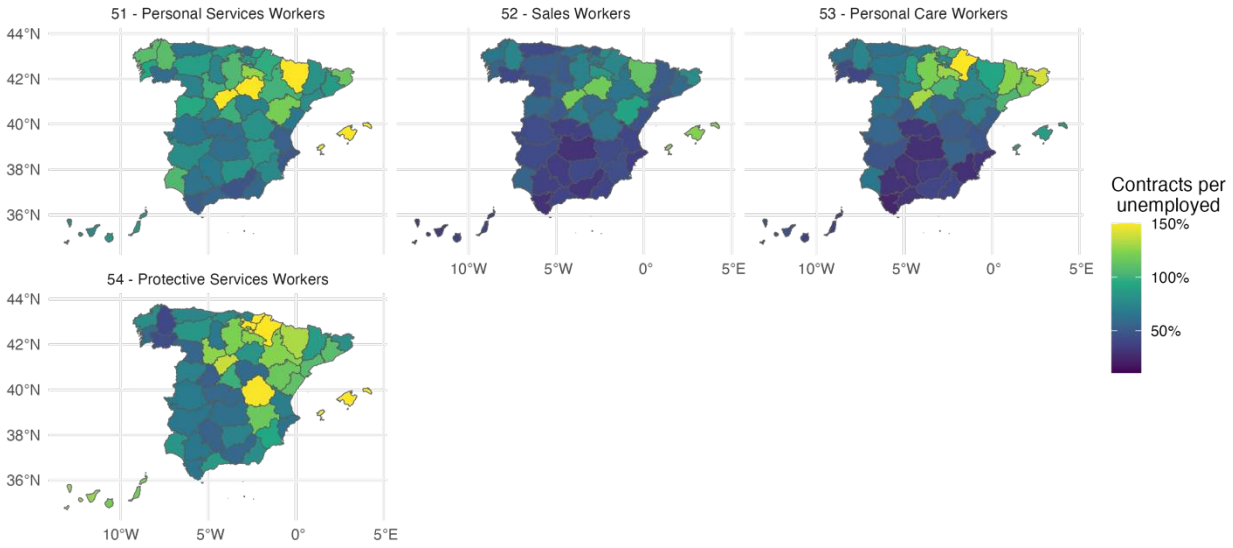
Figure 14: Job market absorption ratio by occupation and province (Group 4)



ISCO-08 Group 4 – Clerical Support Workers – presents relatively low absorption ratios across most provinces, with some variation by sub-group (Figure 14). Overall, the spatial patterns suggest that labor market absorption in clerical occupations remains limited in most parts of the country. Customer Services Clerks (Group 42) stand out for having notably higher absorption ratios, particularly in Navarra and the Balearic Islands, suggesting more dynamic hiring in client-facing roles. In contrast, General and Keyboard Clerks (Group 41) and Other Clerical Support Workers (Group 44) display uniformly low ratios, reflecting limited contract creation. Numerical and Material Recording Clerks (Group 43) show slightly more variation, with localized peaks in provinces such as Guadalajara and Gerona. Overall, clerical occupations exhibit subdued labor market dynamism across most regions.

Service and Sales Workers (ISCO-08 Group 5)

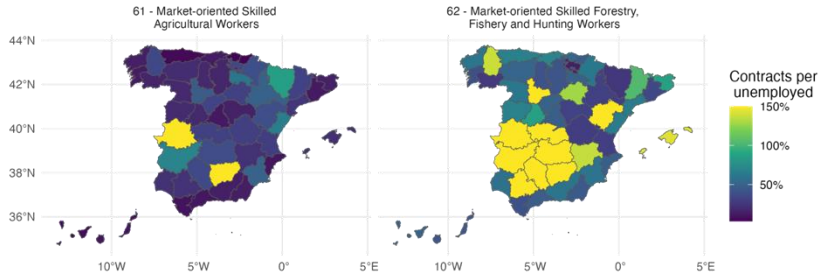
Figure 15: Job market absorption ratio by occupation and province (Group 5)



ISCO-08 Group 5 – Service and Sales Workers – shows relatively high absorption ratios overall, with some variation across the four sub-groups and across provinces (Figure 15). Compared to previous occupational groups, several categories within this group present stronger ratios across a wider geographic range. **Personal Services Workers (Group 51)** and **Protective Services Workers (Group 54)** show consistently high absorption in areas such as Navarra, the Balearic Islands, and Castilla-La Mancha, indicating robust demand in hospitality and security-related roles. **Personal Care Workers (Group 53)** display notably higher ratios in the northeast, especially in Navarra, the Basque Country, and Catalonia, pointing to regional concentration in care sector recruitment. By contrast, **Sales Workers (Group 52)** show more moderate and uneven patterns, with lower ratios in the southern provinces. Overall, this group demonstrates more dynamic hiring conditions than most others, though regional imbalances persist.

Skilled Agricultural, Forestry and Fishery Workers (ISCO-08 Group 6)

Figure 16: Job market absorption ratio by occupation and province (Group 6)

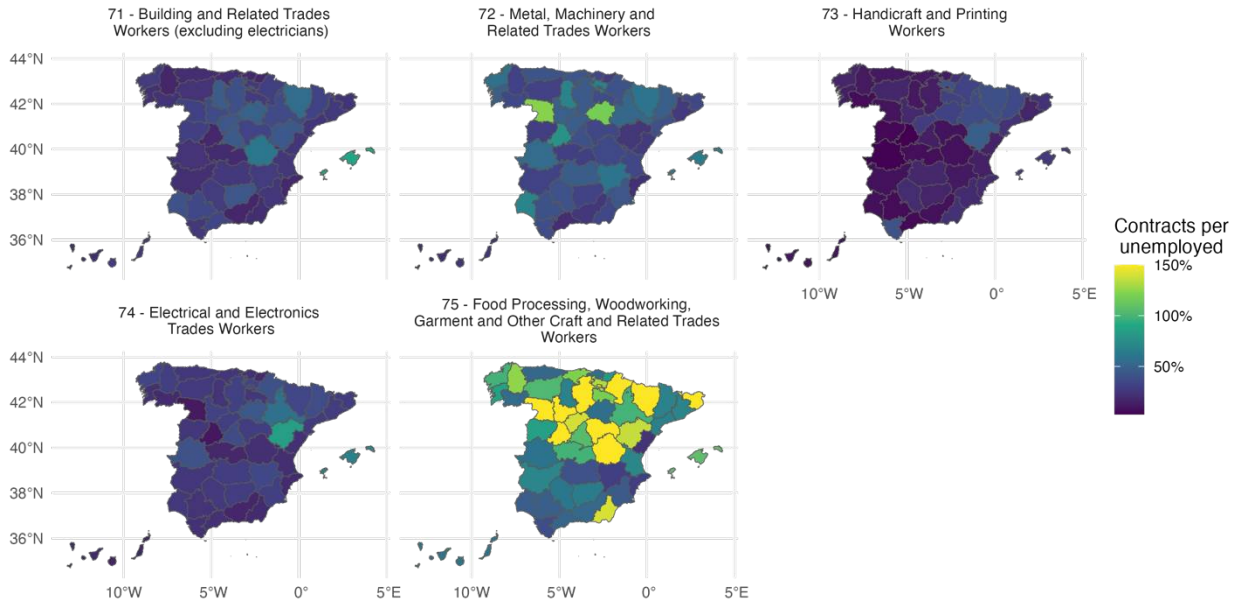


ISCO-08 Group 6 – Skilled Agricultural, Forestry and Fishery Workers – shows distinct and somewhat contrasting absorption patterns across its two occupational sub-groups (Figure 16). Skilled Agricultural Workers (Group 61) show generally low absorption across most provinces, with isolated peaks in

Extremadura and Jaén, likely tied to agricultural cycles. In contrast, **Skilled Forestry, Fishery and Hunting Workers (Group 62)** register broader and stronger absorption, particularly across central and southern Spain (notably Castilla-La Mancha, Extremadura, and Andalusia), as well as parts of the north coast and Balearic Islands, reflecting diverse and region-specific demand across primary industries.

Craft and Related Trade Workers (ISCO-08 Group 7)

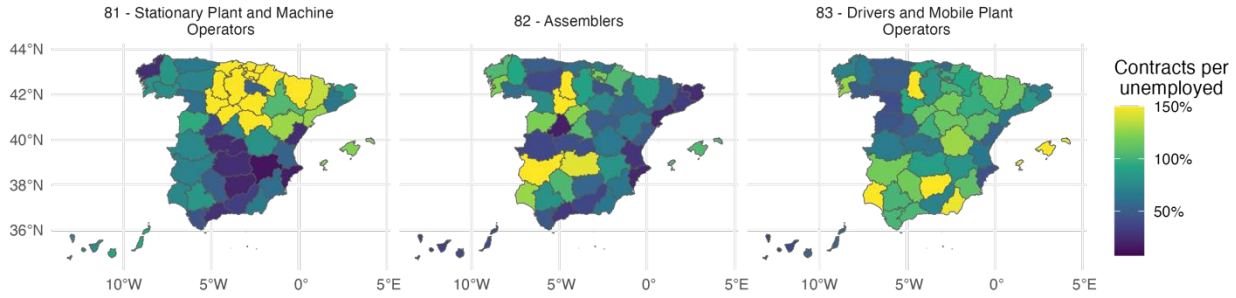
Figure 17: Job market absorption ratio by occupation and province (Group 7)



ISCO-08 Group 7 – Craft and Related Trades Workers – shows diverse labor absorption patterns across its sub-groups (Figure 17). Most categories exhibit relatively low ratios nationwide, while a few others reveal higher demand concentrated in specific regions. **Food Processing and Related Trades Workers (Group 75)** stand out with strong absorption ratios across central and northern provinces, including Castilla-La Mancha, Aragón, Navarra, and Catalonia, suggesting active hiring or small unemployment pools. **Metal and Machinery Trades Workers (Group 72)** also show moderate absorption, especially in Castilla y León and some northwestern provinces. By contrast, **Building Trades Workers (Group 71), Handicraft and Printing Workers (Group 73)**, and **Electrical and Electronics Workers (Group 74)** exhibit consistently low ratios nationwide, pointing to either structural oversupply or under-registration of demand in these sectors.

Plant and Machine Operators and Assemblers (ISCO-08 Group 8)

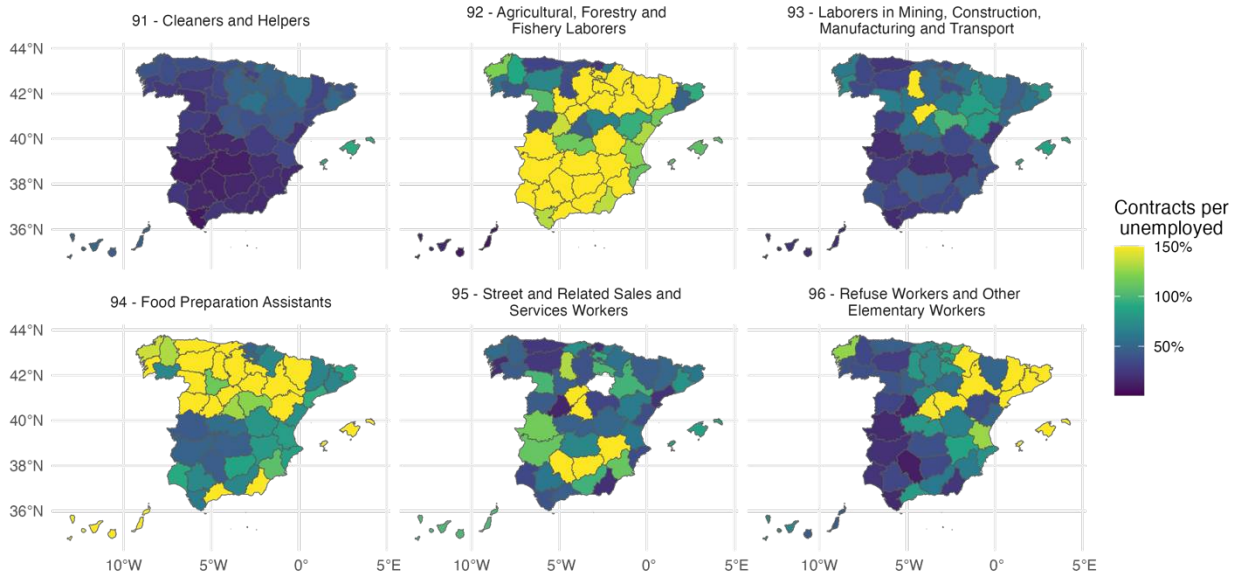
Figure 18: Job market absorption ratio by occupation and province (Group 8)



ISCO-08 Group 8 – Plant and Machine Operators and Assemblers – exhibits relatively strong absorption ratios overall (Figure 18). There is a broad regional spread of medium to high values across all three occupational sub-groups. **Stationary Plant and Machine Operators (Group 81)** stand out in northern regions such as Castile and León, Navarra, and the Basque Country, while **Assemblers (Group 82)** register higher absorption in the west and south, especially in Extremadura, Andalusia, and Castilla-La Mancha, reflecting diverse regional industrial demands. **Drivers and Mobile Plant Operators (Group 83)** display moderately high absorption ratios nationwide, with concentrations in Andalusia and the Balearic Islands, indicating relatively steady hiring across both urban and rural settings.

Elementary Occupations (ISCO-08 Group 9)

Figure 19: Job market absorption ratio by occupation and province (Group 9)



ISCO-08 Group 9 – Elementary Occupations – displays some of the strongest and most widespread labor absorption ratios in the country, particularly in sub-groups related to agriculture, cleaning, and manual labor (Figure 19). Despite being lower-skilled roles on average, these occupations appear to be in

consistently high demand across much of Spain. Agricultural, Forestry and Fishery Laborers (Group 92) consistently exhibit the highest absorption ratios nationally, particularly in southern and northern Spain, including Castilla-La Mancha, Extremadura, Andalusia, Aragón, and Castile and León – indicating sustained demand for manual agricultural labor. Food Preparation Assistants (Group 94) also show elevated absorption across most provinces, especially in northern areas, suggesting consistent hiring across urban and rural contexts. Refuse Workers and Other Elementary Workers (Group 96) follow with moderately high ratios, particularly in the northeast and central regions, underscoring broader labor market needs in public and private sanitation or support roles. In contrast, Cleaners and Helpers (Group 91) show low absorption ratios despite being reported as critical by employers, likely reflecting informality in the sector. Laborers in Mining, Construction, Manufacturing and Transport (Group 93) also show mixed results, with moderate ratios in the north but generally low ones in the south. Street and Related Sales and Services Workers (Group 95) present localized absorption, with scattered provinces showing stronger ratios. Overall, while Group 9 includes some of the occupations with the highest measured absorption, the group also illustrates the limits of quantitative analysis in sectors prone to informality.

A.3.3 Qualitative Evidence from Stakeholder Consultations: Regional Labor Shortages

Stakeholder consultations highlighted that the existing regional asymmetries contribute to the persistence of labor shortages even in the context of a large pool of available workforce nationally. Stakeholders who took part in the bottom-up consultations of the COL repeatedly noted that many vacancies remain unfilled not due to the absence of labor supply per se, but due to a mismatch between local demand and the willingness or ability of unemployed workers to relocate. As an illustrative example, stakeholders argued that vacancies for cooks in depopulated provinces like Soria coexist with high unemployment among cooks in urban centers like Barcelona, which underscores the limited geographic mobility of the domestic workforce. In this context, migrant labor is seen by many stakeholders as crucial to addressing regional shortages, not only because of its volume but because of a perceived higher geographic flexibility of migrant workers compared to nationals. Nonetheless, migrants' own internal mobility within Spain is constrained by housing affordability, administrative barriers such as family reunification timelines, and the concentration of support networks in major cities.

The mismatch between centralized migration policy and decentralized labor responsibilities further complicates regional responses to labor shortages. While the national government manages visa and work authorization processes, autonomous communities are in charge of active labor market policies, vocational training, and many integration programs. This institutional split, combined with limited intergovernmental coordination, creates inefficiencies and hinders the design of targeted migration pathways that respond to region-specific labor gaps. Stakeholders argued that some regions, such as Catalonia and Madrid, have developed more proactive and comprehensive integration frameworks, while others, like Andalusia, face more pronounced capacity constraints. Calls from regions for greater influence over migration tools, such as the Catalog of Hard-to-Fill Occupations, reflect the growing recognition that regional labor market planning must be matched with the capacity to influence migration policy levers.

A.4 Additional Research Topic: Regional Distribution of Latin American Migrants

The spatial distribution of foreign and Latin American migrants across Spain reveals regional variation in migrant concentration. This spatial analysis is based on microdata from the Spanish Labor Force Survey (EPA), a household survey which, while nationally representative, may produce less precise estimates at lower geographic levels, particularly for smaller migrant subpopulations. As shown in Figure 20, the share of residents with foreign nationality is highest in the Balearic Islands, Catalonia, Madrid, and Valencia, while Extremadura, Galicia, and Asturias report the lowest shares. When looking specifically at migrants from Spanish-speaking countries (Figure 21), the pattern largely overlaps but shows particularly high shares in Madrid, and lower relative shares in Catalonia, Valencia, and the Balearic Islands.

Figure 20: Share of foreign population by autonomous community (EPA, INE 2024)

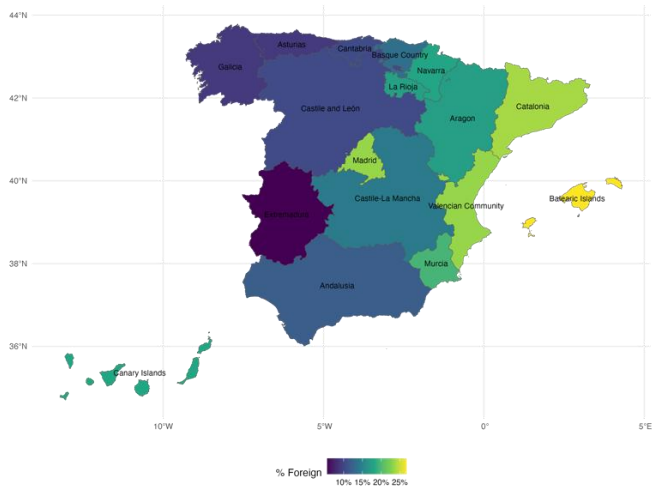
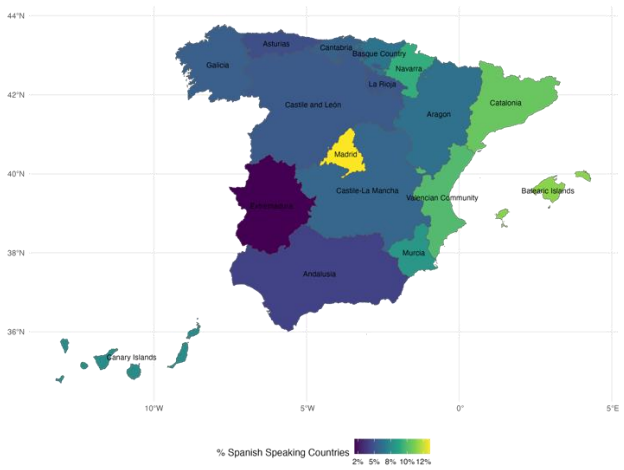
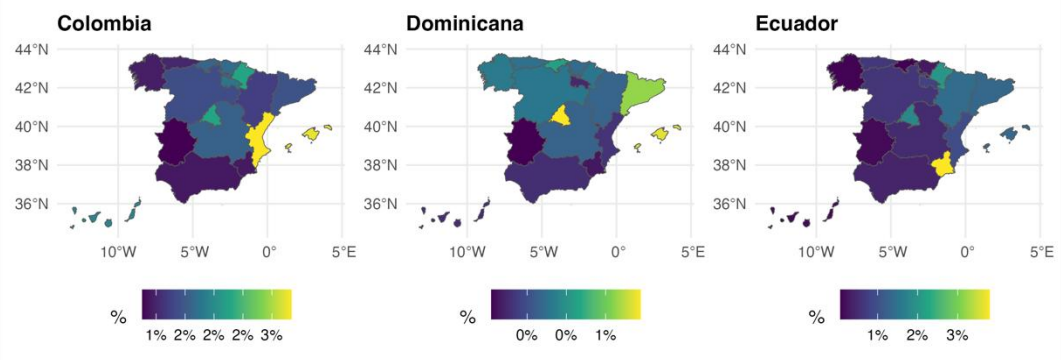


Figure 21: Share of population from Spanish-speaking foreign countries by autonomous community (EPA, INE 2024)



The regional distribution of migrants from Colombia, Ecuador, and the Dominican Republic reveals distinct yet overlapping patterns across Spain, with potentially important implications for both policy targeting and support services. As illustrated in Figure 22, the Colombian population is most heavily concentrated in Valencia and the Balearic Islands, where they account for around 3% of the total population, followed by notable clusters in Marid and Navarra. In contrast, Dominican migrants are most prominent in Madrid, followed by the Balearic Islands and Madrid. The Ecuadorian population displays a very high concentration in Murcia, followed by Madrid and Navarra. While each community has its own migration history and settlement dynamics, the maps suggest a convergence in key regions. This convergence may, in part, reflect the role of established diaspora networks and social ties in shaping migration decisions, as newly arriving individuals are likely to settle where community support and informal information channels already exist. These regions may therefore represent priority areas for the coordination of labor integration efforts and support from migrant associations.

Figure 22: Share of foreign population from Colombia, Dominican Republic, and Ecuador by autonomous community (EPA, INE 2024)



A.5 Additional Research Topic: Demographic Analysis of the Spanish Labor Force

This section aims to provide a demographic profile of the Spanish labor force, with a focus on how key characteristics such as education, age, and unemployment vary across population groups and regions. The analysis is based on Spain's labor force survey (EPA), and is disaggregated by educational attainment, age group, gender, and migrant origin. As a household survey, the EPA offers nationally representative estimates but may be less precise when analyzing smaller subpopulations or regional breakdowns. Given the study's focus on the potential development of GSPs with Colombia, Ecuador, and the Dominican Republic, the section highlights – whenever possible given the limitations of the dataset – the demographic characteristics of nationals from these three countries residing in Spain. The analysis aims to inform the identification of specific constraints or opportunities facing these populations in the Spanish labor market, with particular attention to women, youth, and older migrants.

A.5.1 Educational Attainment Across the Workforce

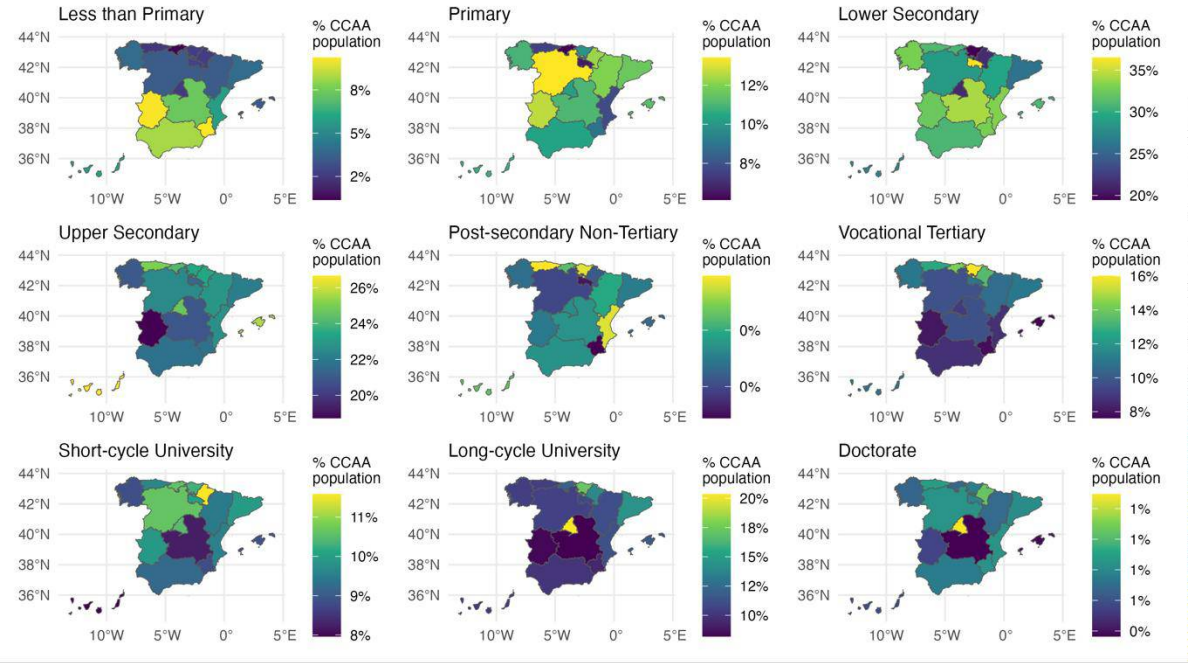
Educational attainment in Spain's labor force reveals both regional disparities and certain differences between the native-born population and migrant communities. As described in Table 22, across the whole sample, the most common education levels are lower secondary (25.11%) and upper secondary (19.56%), with university-level attainment (short-cycle and long-cycle combined) accounting for roughly 17% of the population. Foreigners display an educational profile that is broadly comparable to the overall population, but with a slightly higher concentration at the upper secondary level (25.18% compared to 19.56%) and a somewhat lower share with tertiary education. Among foreigners from the three Latin American countries specifically, the prevalence of upper secondary education is even more pronounced – especially for Colombians, among whom around one-third (33.66%) report this as their highest level of completed education. By contrast, the share of Latin American migrants with university education or doctorates remains lower than the average for the whole sample across all three nationalities.

Table 22: Distribution of education level (EPA, 2024)

Education Level	Whole sample	Foreigners	Colombians	Ecuadorians	Dominicans
Unknown	13.11%	13.29%	10.05%	13.6%	13.35%
Less than Primary	4.34%	4.6%	2.75%	4.69%	4.66%
Primary	9.29%	8.83%	7%	8.59%	8.79%
Lower Secondary	25.11%	25.8%	28.51%	25.46%	25.69%
Upper Secondary	19.56%	25.18%	33.66%	25.01%	25.07%
Post-secondary Non-Tertiary	0.08%	0.08%	0.08%	0.08%	0.08%
Vocational Tertiary	8.59%	5.44%	5.26%	5.29%	5.44%
Short-cycle University	8.26%	6.86%	6.02%	7.08%	6.94%
Long-cycle University	10.97%	9.43%	6.51%	9.7%	9.48%
Doctorate	0.7%	0.49%	0.17%	0.51%	0.5%

The spatial distribution of education levels across Spain further highlights the unequal distribution of human capital by region. The maps in Figure 23 show that autonomous communities in the center, south and northwest of the country – such as Extremadura, Andalusia, Castile and León Murcia , and Castilla la Mancha – report the highest shares of population with less than primary or primary education. Northern and northeastern regions – including Galicia, Asturias, Aragon, Catalonia and Valencia – present a more balanced distribution of individuals across all educational levels. The Basque Country stands out for its high share of population with vocational tertiary education, while Navarra shows a notable concentration of individuals with short-cycle university degrees. Madrid presents a contrasting trend to that of the eastern and southern autonomous communities, with a comparatively high share of individuals holding long-cycle university and doctorate degrees. Notably, Balearic and Canary Islands show relatively low levels of higher education, and higher proportions of individuals with upper secondary qualifications, possibly linked to their tourism-oriented labor markets.

Figure 23: Spatial distribution of education levels by autonomous community (2024, EPA)



The distribution of educational attainment by age group (Table 23) reveals clear generational progress in access to secondary and tertiary education in Spain. Among individuals aged 60 and above, nearly a quarter (24.0%) have completed only primary education, and 12.3% remain with less than primary education. In contrast, university-level education is far more prevalent among younger cohorts: among individuals aged 19–29, 14.7% have completed short-cycle university programs and 9.2% hold long-cycle university degrees. Vocational tertiary education also features prominently in this age group, accounting for 14% of individuals. By comparison, the same educational levels represent smaller shares among older groups, especially those aged 60+, where only 6.4% have short-cycle university degrees and 8.4% have long-cycle degrees. These trends confirm a steady expansion of educational attainment over successive generations, with younger Spaniards considerably more likely to possess upper secondary, vocational, or university-level qualifications than their older counterparts.

Table 23: Distribution of education level by age group (EPA, 2024)

Education Level / Age Group	19 - 29	30 - 44	45 - 59	60+
Less than Primary	0,9%	1,7%	2,2%	12,3%
Primary	2,7%	4,4%	4,7%	24,0%
Lower Secondary	18,7%	25,0%	30,5%	27,8%
Upper Secondary	39,7%	22,3%	23,2%	15,4%
Post-secondary Non-Tertiary	0,1%	0,1%	0,1%	0,1%
Vocational Tertiary	14,0%	13,4%	12,5%	4,8%
Short-cycle University	14,7%	13,0%	9,3%	6,4%
Long-cycle University	9,2%	19,0%	16,3%	8,4%
Doctorate	0,1%	1,1%	1,2%	0,7%

A.5.2 Age Structure and Generational Gaps

The age composition of Spain's population reveals a pronounced demographic contrast between native-born residents and migrant communities, particularly those from Colombia, Ecuador, and the Dominican Republic. As depicted in Table 24, among the general population, 27.1% are aged 60 and over, reflecting Spain's broader aging trend. In comparison, only 12.5% of foreigners fall into this age bracket, with an even lower share among Colombians (9.9%). The working-age group of 30–44 years concentrates the largest share of migrants: 33.7% among Colombians and 29.6% among both Ecuadorians and Dominicans, compared to 19.5% of the overall population. Similarly, the 19–29 age group accounts for 15.4% of foreigners overall, and 19.5% of Colombians, versus 11.9% of the total population. These differences underscore the younger and more economically active profile of Spain's Latin American migrant communities. This structure not only reflects the labor-driven motivations behind migration but also suggests that many migrants enter Spain at a stage when they can contribute productively over the long term.

Table 24: Distribution of individuals by age groups (EPA, 2024)

Age Group	Whole sample	Foreigners	Colombians	Ecuadorians	Dominicans
0-18	17,5%	17,5%	13,9%	17,9%	17,5%
19 - 29	11,9%	15,4%	19,5%	15,3%	15,3%
30 - 44	19,5%	29,6%	33,7%	29,6%	29,6%
45 - 59	23,9%	25,0%	22,9%	24,8%	25,0%
60+	27,1%	12,5%	9,9%	12,5%	12,6%

At the regional level, population aging is not evenly distributed across Spain. The map in Figure 24, depicting the share of the population aged 60 and over shows clear aging concentrations in northern region, particularly in Asturias, Castile and León, and Galicia. These areas align closely with the broader "España Vaciada" trend and may face increasing pressure to attract younger workers. In contrast, the share of the population aged 21 or under, represented in Figure 25, is highest in regions such as Murcia, Andalusia, and Navarra, suggesting more favorable demographic dynamics in these areas, potentially supported by higher birth rates or recent migration inflows.

Figure 24: Share of Population Aged 60 and Over

Figure 25: Share of Population Aged 21 and Less

Together, these patterns suggest that the aging of Spain's native population is partially offset by the younger age profile of its migrant residents. While this demographic dynamic presents an opportunity to address future labor force needs, it also raises questions about the degree to which younger migrants are able to integrate effectively into the labor market – an issue explored further in the next sub-sections.

A.5.3 Unemployment by Age, Gender, and Education

Understanding unemployment by age, gender, and education requires data that fully reflects the composition of Spain's labor force. Unlike the SEPE and Lightcast data used in the top-down methodology, the EPA survey captures both formal and informal employment, providing a more comprehensive view of Spain's labor market. This is particularly important given that informal employment remains a notable

feature of the Spanish economy and is especially prevalent in southern regions as well as among women, youth, and less-educated individuals – groups that also experience relatively higher unemployment. Although EPA data is limited to broader two-digit occupational categories, its inclusion of informal workers makes it an essential source for understanding which demographic segments are most exposed to labor market vulnerabilities.

Unemployment in Spain remains particularly high among younger adults, with both native-born and migrant populations facing elevated rates in the early stages of their working life (Table 25). In the 19–29 age group, 20.7% of the general population is unemployed, rising to 22.3% among migrants and 25.8% among Colombians, confirming the persistently high levels of youth unemployment observed in Spain, which ranks among the highest in the EU. While unemployment declines with age, a significant disparity remains between migrants and the general population across all subsequent age brackets. Among individuals aged 30–44, the unemployment rate stands at 11.0% for the overall population, compared to between 15.9% and 18.8% for migrant groups. This pattern continues in the 45–59 and 60+ age brackets, where migrant unemployment remains 5 to 7 percentage points higher than the national average. These trends highlight enduring labor market disadvantages for foreign-born workers well beyond the entry phase and point to the need for sustained integration policies across the entire working life.

Table 25: Unemployment rate by age group (EPA, 2024)

Age Group	Whole sample	Foreigners	Colombians	Ecuadorians	Dominicans
19 - 29	20,7%	22,3%	25,8%	22,8%	22,2%
30 - 44	11,0%	16,0%	18,8%	16,5%	15,9%
45 - 59	10,6%	15,9%	17,6%	16,4%	16,0%
60+	12,8%	19,2%	22,7%	19,6%	18,9%

Educational attainment remains a key determinant of labor market outcomes, with unemployment rates falling steadily as education levels increase. Gender disparities, however, persist across all levels. As depicted in Table 26, among individuals with less than primary education, unemployment reaches 40.3% for women and 25.9% for men. This gap remains at the primary education level, with 31.9% of women and 22.3% of men unemployed. At the upper secondary level, the gender difference narrows but does not disappear: 16.2% of women are unemployed compared to 12.0% of men. Even among those with vocational tertiary education, women report a higher unemployment rate (12.5%) than men (8.2%). In short- and long-cycle university programs, the gender gap continues, with women's unemployment at 9.6% and 6.7%, respectively, versus 7.1% and 4.3% for men. These patterns suggest that education mitigates, but does not eliminate, gender-based disadvantages in Spain's labor market.

Migrant status compounds educational inequalities, particularly at higher education levels, where migrants face significantly higher unemployment than the native-born population. At nearly every education level, foreigners experience higher unemployment than the population as a whole, with female migrants disproportionately affected. The exceptions are among individuals with primary or less than primary education, where migrant unemployment is lower than that of the whole sample, and it applies to both male and female workers. Among those with upper secondary education, 17.7% of foreigners are unemployed compared to 13.9% overall. This gap widens for tertiary-educated groups: foreigners with vocational tertiary or short-cycle university degrees have unemployment rates of 15.8% and 15.5%, respectively, well above the national averages of 10.1% and 8.6%. For those with long-cycle university degrees, the unemployment rate is 10.1% among foreigners and 12.8% among female foreigners,

compared to just 5.6% overall. These figures underscore a misalignment between migrants' formal qualifications and their labor market integration, with particularly acute barriers for migrant women.

Table 26: Unemployment rate by education, gender, and migrant status (EPA, 2024)

Education Level	Whole sample	Female	Male	Foreigners	Female Foreigners	Male Foreigners
Less than Primary	31,4%	40,3%	25,9%	28,8%	37,3%	24,0%
Primary	25,9%	31,9%	22,3%	23,4%	28,8%	19,8%
Lower Secondary	17,5%	22,1%	14,5%	18,5%	21,5%	16,0%
Upper Secondary	13,9%	16,2%	12,0%	17,7%	18,5%	16,8%
Post-secondary Non-Tertiary	28,8%	33,5%	25,6%	54,8%	74,2%	14,1%
Vocational Tertiary	10,1%	12,5%	8,2%	15,8%	16,5%	15,0%
Short-cycle University	8,6%	9,6%	7,1%	15,5%	17,1%	13,3%
Long-cycle University	5,6%	6,7%	4,3%	10,1%	12,8%	6,8%
Doctorate	4,7%	4,8%	4,5%	14,3%	16,2%	12,7%

Even when educational attainment is high, younger individuals continue to face elevated unemployment rates, confirming that early-career disadvantage cannot be fully offset by qualifications alone. Table 27 shows that, among individuals aged 19–29, unemployment is noticeably high across most education levels: 43.6% for individuals with only primary education, 28.4% for those with lower secondary, and 22.5% for upper secondary graduates. Even among those with vocational tertiary education or short-cycle university degrees, unemployment remains at 14.2% and 10.9%, respectively. This contrasts sharply with older cohorts, where unemployment declines steadily across most education levels. For example, among individuals aged 30–44, unemployment drops to 7.2% for vocational tertiary graduates and 5.6% for those with short-cycle university degrees. Among the 45–59 group, unemployment falls further, to 6.4% and 4.5% for the same education levels. The only exceptions are young adults aged 19-29 with long-cycle university degrees, who have lower unemployment rates than those aged 30-44 with similar educational attainment. At the lower end of the education spectrum, unemployment remains persistently high regardless of age. These findings suggest that while education offers clear protective effects over time, young people remain at a pronounced disadvantage in the Spanish labor market, even when well qualified.

Table 27: Unemployment rate by age group and education level (EPA, 2024)

Education Level / Age Group[62]	19 - 29	30 - 44	45 - 44	60+
Less than Primary	-	33,2%	30,7%	29,8%
Primary	43,6%	24,9%	23,1%	20,4%
Lower Secondary	28,4%	15,6%	14,8%	16,2%
Upper Secondary	22,5%	11,5%	10,8%	13,0%
Post-secondary Non-Tertiary	-	-	7,6%	-
Vocational Tertiary	14,2%	7,2%	6,4%	7,0%

[62] Unemployment rates for specific age-education combinations are only reported when the active population within that group exceeded 100 individuals in the sample. This threshold was applied to avoid misleading interpretations based on small sample sizes.

Short-cycle University	10,9%	5,6%	4,5%	4,3%
Long-cycle University	3,0%	8,3%	3,1%	1,7%
Doctorate	-	22,6%	34,2%	44,0%

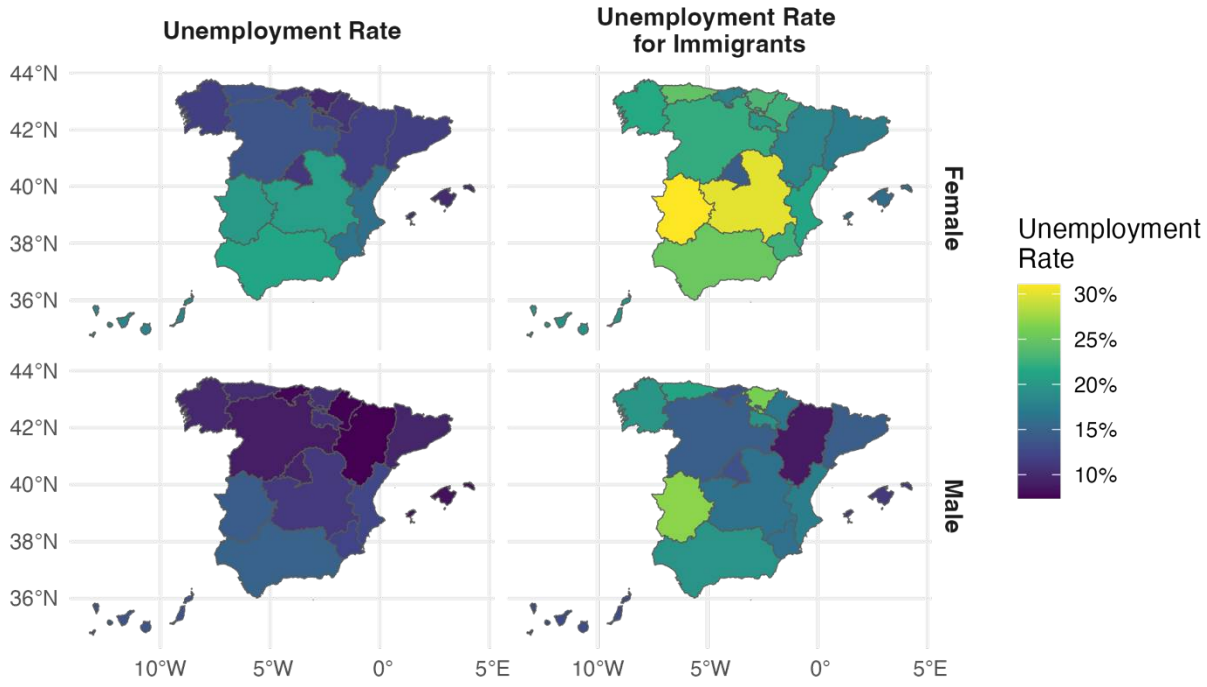
Unemployment in Spain is not only shaped by individual characteristics such as age, gender, or education, but also by significant regional disparities. The first map, depicted in Figure 26, displays the overall unemployment rate by autonomous community and reveals a clear north–south divide in labor market outcomes across Spain. Southern regions – including Andalusia and Extremadura – register the highest unemployment rates, reflecting persistent structural challenges in these regional labor markets. These coincide with the regions with the lowest education levels, as described in the previous sub-sections. In contrast, northern communities such as the Basque Country, Navarra, La Rioja, Aragón, as well as the urban regions of Catalonia and Madrid, present significantly lower unemployment levels. Central regions like Castilla-La Mancha, Murcia and Valencia show moderate rates. The Balearic Islands present low levels of unemployment, while the Canary Islands present a higher unemployment rate. Importantly, this analysis sets the backdrop for understanding how unemployment burdens may compound when disaggregated by gender and migrant status.

Figure 26: Unemployment Rate by Autonomous Community (EPA, 2024)

Figure 27 disaggregates unemployment by sex and migration status, uncovering stark differences between native-born and foreign-born individuals, particularly among women. Immigrant women experience the highest unemployment rates overall, especially in regions such as Castilla-La Mancha and Extremadura, where rates are visibly higher than for both men and native-born women. This suggests systemic barriers to labor market access, potentially linked to informal employment, care responsibilities, or discrimination.

Immigrant men also face elevated unemployment compared to native-born men, although their rates are generally lower than those of immigrant women. Notably, the maps also reveal that some regions with moderate overall unemployment – such as Valencia, Catalonia and the northern communities – mask higher rates for specific subgroups, underscoring the value of intersectional analysis in regional labor assessments.

Figure 27: Unemployment Rate by Autonomous Community, Gender, and Migrant Status



A.5.4 Challenges faced by Women, Youth and Older Migrants

Migrant women, youth, and older individuals face overlapping structural and social barriers that limit their full integration into the Spanish labor market, despite often possessing the skills and willingness to work in in-demand sectors. Consultations with **employers**, **migrant associations**, and **institutional stakeholders** consistently emphasized how gender, age, and migration status intersect to shape these groups' labor market experiences in distinct ways.

- **Women migrants are often concentrated in a narrow set of highly feminized sectors, such as domestic and care work, where informality, low pay, and limited advancement opportunities are common**. For example, Colombian migrant women were frequently cited as key contributors to Spain's domestic care economy, while Moroccan women were also mentioned as prevalent in kitchen and food service roles. Stakeholders noted that the intersection of gender with caregiving responsibilities and legal status can further constrain labor opportunities. These trends align with quantitative data showing elevated unemployment rates among women with lower levels of education, and even among women with tertiary qualifications. Initiatives aimed at increasing women's autonomy – such as helping them obtain driving licenses – were highlighted by

stakeholders as critical both for safety and for expanding job options across geographically dispersed sites.

- **Youth migrants and children of migrant parents, including those born or educated in Spain, also face significant labor market exclusion, often despite having attained tertiary qualifications.** Stakeholders reported cases where second-generation migrants, even with university degrees, end up working in low-skilled sectors due to lack of opportunity and discrimination. Some regional programs – such as those supporting unaccompanied young migrants in Catalonia – have proven effective at facilitating access to work permits and integration pathways for unaccompanied minors, suggesting the potential of targeted approaches. Additionally, stakeholders pointed to digital fluency among younger migrants as an untapped asset that could be leveraged more effectively through sector-specific training and employment initiatives.
- **For older migrants, especially those over 45 or 50 years old, age itself emerges as a substantial barrier to employment, often even more pronounced than for the native-born population.** Stakeholders emphasized that older migrants face severe difficulty in accessing new job opportunities, and that this challenge is compounded by gaps in digital skills and difficulty retraining for roles requiring technological proficiency or physical endurance. These insights complement quantitative data showing significantly higher unemployment among older migrants compared to the general population, particularly in the 60+ group. Several stakeholders proposed reimagining the role of older workers, suggesting that their experience could be leveraged through mentorship, training, or non-physical roles. Some firms were noted to actively recruit older individuals under the assumption that they might offer greater stability and retention.

Taken together, the challenges faced by migrant women, youth, and older adults point to the need for intersectional, targeted labor market policies that go beyond general training and activation programs. While younger migrants bring digital skills and long-term potential, older migrants offer experience and reliability, and women often bring qualifications that can be valuable to the economies of the destination countries. Fully tapping into these contributions requires recognizing the specific obstacles each group faces – from credential recognition and childcare burdens to sectoral segregation and age-based exclusion – and designing inclusive pathways that can transform demographic challenges into labor market resilience.

A.6 Additional Research Topic: Demographics of Occupation Groups Containing Critical Occupations

This analysis aims to profile the workforce employed in occupations included in the final COL, focusing specifically on their age distribution and educational attainment. Understanding the demographic and educational characteristics of workers in critical occupations can help identify potential risks – such as workforce aging or qualification mismatches – and inform future labor and migration policy interventions. This analysis is drawn from Spain's national labor force survey (EPA), which is only available at the 2-digit CNO-11 level. To align the COL with the EPA, the final list of critical occupations was converted from ISCO-08 to CNO-11, and then a 2-digit occupation was classified as "Critical" if at least one of its 4-digit sub-occupations was included in the final COL. This approach classifies around 63% of occupations as critical, and 28% of occupations are critical with only one 4-digit sub-occupation in the COL. Nonetheless, this analysis gives an indication of the characteristics of individuals in critical and non-critical occupations. All results apply the appropriate survey weights to ensure population-representative estimates.

A.6.1 Age Profile of Workers in Critical Occupations

The age distribution of workers in critical occupations reveals a moderate generational imbalance, with a slightly higher concentration of older workers compared to younger cohorts (Table 28). On average, 52% of workers in COL occupations are aged 45 or older, compared to 49% in non-critical occupations. This age skew is particularly visible among Managers, where 71% of the COL workforce is aged 45 or above, and among Skilled Agricultural Workers, where 62% of the workforce also falls into the two older age brackets, suggesting a potential risk of knowledge loss and replacement gaps if younger workers do not enter these fields. Conversely, Technicians and Associate Professionals and Clerical Support Workers show a more balanced age profile within COL occupations, including slightly higher representation of workers aged 19–44. In general, the 19-29 age group is underrepresented in COL occupations, accounting for only 13% of workers compared to 16% in non-critical ones. Overall, the data highlight the need to strengthen entry pathways and succession strategies in critical occupations to mitigate future labor shortages linked to demographic ageing.

Table 28: Distribution of worker age by critical / non-critical occupation groups (EPA, 2024)

Occupation Group	COL	0 - 18	19 - 29	30 - 44	45 - 59	60+
1 - Managers	Critical	0%	3%	26%	**56%**	**15%**
	Not Critical	0%	**4%**	**33%**	51%	12%
2 - Professionals	Critical	0%	15%	**40%**	**36%**	9%
	Not Critical	0%	**17%**	38%	35%	9%
3 - Technicians and Associate Professionals	Critical	0%	**19%**	**41%**	34%	6%
	Not Critical	1%	15%	32%	**42%**	**9%**
4 - Clerical Support Workers	Critical	0%	**19%**	**40%**	35%	6%
	Not Critical	0%	11%	35%	**46%**	**9%**
5 - Service and Sales Workers	Critical	1%	13%	31%	**42%**	**12%**
	Not Critical	1%	**21%**	**35%**	36%	7%

6 - Skilled Agricultural, Forestry and Fishery Workers	Critical	0%	6%	32%	45%	17%
	Not Critical	0%	10%	29%	43%	29%
7 - Craft and Related Trade Workers	Critical	0%	11%	36%	44%	9%
	Not Critical	0%	10%	37%	44%	9%
8 - Plant and Machine Operators and Assemblers	Critical	0%	11%	33%	47%	9%
	Not Critical[63]	-	-	-	-	-
9 - Elementary Occupations	Critical	0%	10%	29%	46%	13%
	Not Critical	1%	25%	38%	32%	5%
TOTAL	Critical	0%	13%	35%	42%	10%
	Not Critical	1%	16%	35%	40%	9%

A.6.2 Educational Profile of Workers in COL Occupations

The educational profile of COL workers is broadly similar to non-COL occupations, though with a slight concentration at lower education levels. The educational distribution of workers in critical occupations reveals substantial heterogeneity across occupational groups, with patterns that mirror the functional and skill requirements of each category (Table 29). Overall, COL occupations display slightly lower levels of formal education compared to non-critical occupations, particularly at the upper secondary and tertiary levels. While 30% of COL workers have attained either a short-cycle or long-cycle university degree, this compares to 34% among workers in non-critical roles. Similarly, COL workers are more likely to have only completed lower levels of education: 28% have only completed lower secondary schooling (versus 21% for non-critical occupations), and 5% have only either primary or less than primary education (compared to 3% for non-critical occupations).

This relative educational gap is more marked in higher-skilled groups. Among Mangers in critical occupations, only 47% hold a university degree (compared to 67% in non-critical occupations). In Technicians and Associate Professionals occupations, COL workers are also less likely to hold university degrees (26% vs. 40% for non-critical occupations) but more likely to have vocational tertiary education degrees (44% vs 24% for non-critical occupations. In fact, for all groups except elementary occupations, COL workers are more likely to have vocational tertiary education than non-COL workers. The results suggest that vocational pathways play an essential role in sustaining critical functions and that university-level qualifications are less prevalent in many COL occupations - highlighting the strategic value of short-cycle or vocational training models such as GSPs.

At the lower end of the skills spectrum, the percentage of workers with any form of tertiary or university level degree strongly decreases, and there is a dominance of workers with only the mandatory formal education (secondary education). In critical Elementary Occupations, 89% of COL workers hold only upper secondary education or below (compared to 85% in non-critical occupations), and 16% have either primary or no formal schooling (versus 11% for non-critical). Similarly, among critical Plant and Machine Operators, 85% fall only upper secondary education or below. These trends underscore the need to support upskilling and recognize informal experience within critical roles, particularly in sectors where non-tertiary or vocational qualifications dominate.

[63] All 2-digit occupation groups under major group 8 include at least 1 critical occupation – thus, there is no data for "not critical" occupations in this major group.

Table 29: Distribution of worker education by critical / non-critical occupation groups (EPA, 2024)

Occupation Group	COL	Less than Primary	Primary	Lower Secondary	Upper Secondary	Vocational Tertiary	Short-cycle University	Long-cycle University	Doctorate
1 – Managers	Critical	0%	2%	17%	22%	11%	14%	34%	1%
	Not Critical	0%	1%	8%	15%	8%	15%	52%	2%
2 – Professionals	Critical	0%	0%	0%	2%	4%	34%	55%	5%
	Not Critical	0%	0%	1%	3%	3%	27%	61%	5%
3 - Technicians and Associate Professionals	Critical	0%	0%	9%	19%	44%	13%	13%	0%
	Not Critical	0%	1%	10%	26%	24%	16%	23%	0%
4 - Clerical Support Workers	Critical	0%	1%	19%	33%	17%	18%	13%	0%
	Not Critical	0%	0%	10%	30%	26%	16%	17%	0%
5 - Service and Sales Workers	Critical	1%	3%	28%	42%	15%	6%	5%	0%
	Not Critical	1%	3%	35%	34%	14%	7%	6%	0%
6 - Skilled Agricultural, Forestry and Fishery Workers	Critical	2%	7%	51%	24%	10%	4%	2%	0%
	Not Critical	3%	10%	48%	24%	9%	4%	2%	0%
7 - Craft and Related Trade Workers	Critical	1%	6%	42%	29%	18%	2%	1%	0%
	Not Critical	2%	6%	48%	28%	11%	3%	3%	0%
8 - Plant and Machine Operators and Assemblers	Critical	1%	5%	51%	28%	11%	2%	2%	0%
	Not Critical	-	-	-	-	-	-	-	-
9 - Elementary Occupations	Critical	5%	11%	49%	24%	6%	3%	2%	0%
	Not Critical	2%	8%	44%	31%	9%	3%	3%	0%
TOTAL	Critical	1%	4%	28%	22%	13%	12%	18%	1%
	Not Critical	1%	2%	21%	26%	15%	13%	20%	1%

A.7 Additional Research Topic: Fastest-Growing and Fastest-Declining Occupation Groups

This section shifts from identifying current structural shortages to exploring broader dynamics that could shape Spain's future workforce needs. Drawing on EPA data at the two-digit occupational level, the analysis highlights the top five occupations that have experienced the fastest growth and decline in recent years, alongside a focused discussion on the implications of an aging population – a particularly pressing issue for Spain. While not directly tied to the COL, these perspectives provide a complementary lens, helping anticipate how demographic trends and occupational shifts might influence labor demand over time. This broader outlook supports more forward-looking workforce planning and policy discussions.

A.7.1 Growing Occupations and Their Territorial Distribution

Spain's labor market has seen marked growth in certain occupational groups over the past decade, reflecting broader structural transformations such as technological change and demographic shifts. Drawing on weighted EPA data classified under CNO-11, this sub-section identifies the five occupational groups that recorded the highest relative employment growth between 2014 and 2024 (Figure 28). To explore their spatial distribution, provincial data was averaged over the 2021–2024 period to ensure a more stable picture of geographic patterns (Figure 29).[64] These groups span both technical and service-oriented fields, with notably strong presence in central and urban regions, particularly Madrid. The following groups stand out:

- **ICT Professionals (CNO-11: 27):** Software developers, data scientists, and systems engineers are highly concentrated in Madrid, with relatively modest diffusion elsewhere. This may correspond to ongoing national efforts in digital transformation, which have tended to center in large metropolitan areas with robust digital ecosystems.
- **ICT Support and Infrastructure Technicians (CNO-11: 38):** These operational roles – such as network and hardware support – are among the most geographically concentrated in this group, with very high concentration in Madrid. Similarly to ICT Professionals (CNO-11: 27), the growth of these occupations may be tied to the digital transformation of the Spanish economy.
- **Kitchen Helpers / Assistants (CNO-11: 93):** This group, which includes support roles in food preparation and service, has seen growing employment across Spain, with notable concentrations in Madrid, Catalonia, and certain coastal provinces. The spatial pattern likely reflects both tourism-driven demand in coastal regions and the dense hospitality infrastructure of large urban centers. Growth in this occupation may also be linked to the continued expansion of restaurant and food delivery services post-pandemic, particularly in metropolitan and tourist-heavy areas.
- **Health Technicians and Alternative-Health Associate Professionals (CNO-11: 33):** Workers in this group – including radiology, rehabilitation, and physiotherapy assistants – are more widely distributed, with greater density in Catalonia, Madrid, and some coastal provinces and northern

[64] Total employment data were not used in the top-down analysis because they are not consistently available at the 4-digit ISCO level across all occupational groups. For this reason, total employment is analyzed separately at the 2-digit level in this section, where data coverage is more robust and allows for meaningful comparison.

areas. Their growth could relate to the gradual expansion of health services and an aging population's increasing reliance on both traditional and complementary care modalities.

- Construction and Mining Workers (CNO-11: 96): Employment in this group shows marked growth across a broad set of provinces, particularly concentrated in southern and central Spain, Catalonia and Madrid. The broader territorial spread relative to other occupations may reflect the decentralization of construction activity and ongoing investment in housing and public works across multiple regions.

Figure 28: Five fastest-growing occupation groups (2014-2024, EPA)

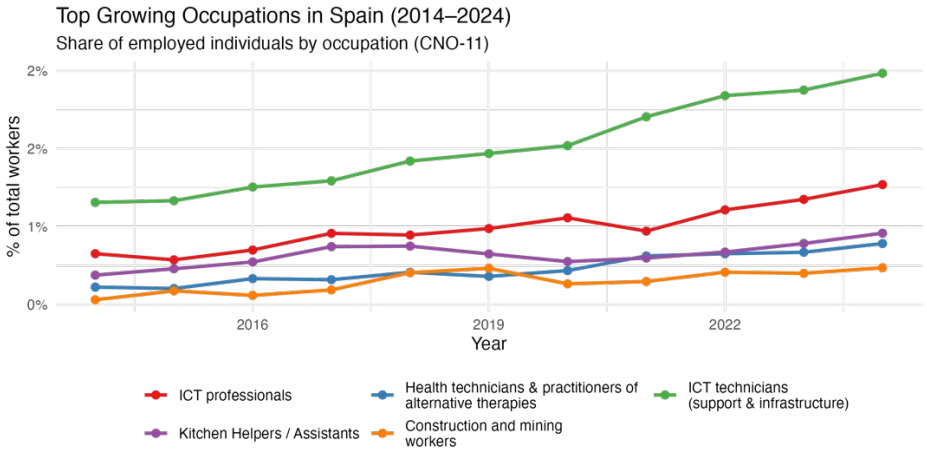
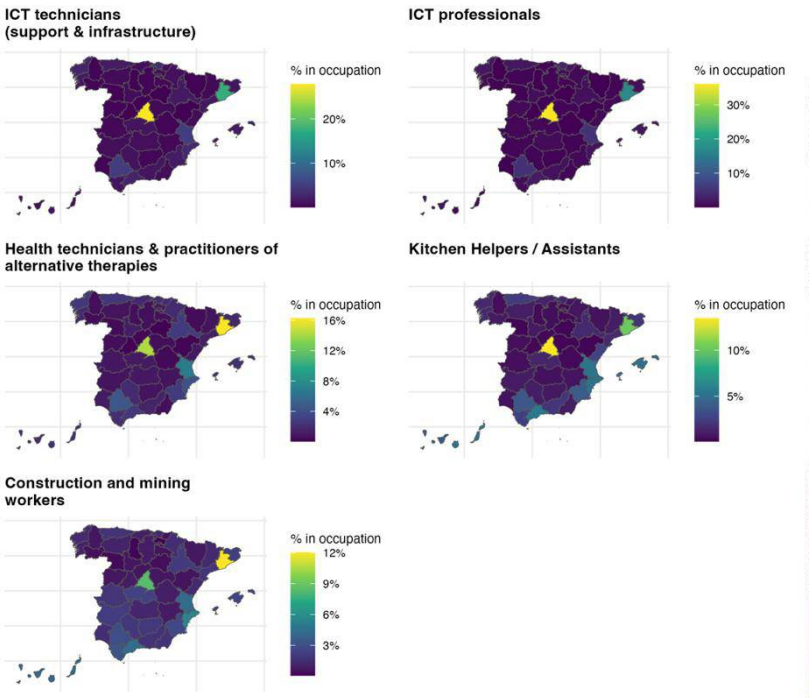


Figure 29: Geographic distribution of the fastest-growing occupation groups (2021-2024, EPA)



A.7.2 Declining Occupations and Their Territorial Distribution

While certain occupations continue to expand alongside structural and technological changes in Spain's labor market, others are experiencing steady decline, reflecting broader economic, demographic, and institutional shifts. The five occupational groups below, classified at the 2-digit CNO-11 level, have shown the most notable declines in employment between 2014 and 2024 (Figure 30). Although each follows distinct trajectories, they share common vulnerabilities, such as informality, demographic attrition, and technological or market disruptions. Their geographic concentration also points to specific regions where these trends may be most acutely felt (Figure 31).

- **Domestic Workers (CNO-11: 91):** This group, primarily composed of household helpers providing cleaning, caregiving, and domestic support, has experienced one of the sharpest employment declines. This may be due to increased reliance on informal labor, outsourcing to agencies, or the adoption of labor-saving household technologies. The main concentration of workers is in Madrid.
- **Shop-owner Traders (CNO-11: 53):** Independent retail proprietors managing small shops and kiosks have seen consistent workforce reductions. Their decline likely reflects competition from large retail chains and the steady shift to online commerce. Workers in these occupations remain mostly concentrated in Madrid, coastal areas and the northern provinces.
- **Bartenders, Waiters and Cooks (including self-employed) (CNO-11: 50):** Employment among hospitality workers, including café and restaurant operators, has decreased notably. This may stem from post-pandemic business consolidation, rising operational costs, or an increase in informality. The contraction is relatively widespread, though Madrid and regions with strong tourism dependence, such as the Mediterranean coast, continue to maintain comparatively higher employment levels despite the overall decline.
- **Skilled Livestock Workers (CNO-11: 62):** Specialized workers in cattle, poultry, and similar activities have declined, likely due to mechanization, market volatility, and rural population ageing. This occupational group is highly geographically concentrated in Galicia.
- **Skilled Workers in Mixed Agricultural Activities (CNO-11: 63):** This occupational group - covering roles that combine crop cultivation and animal husbandry – has experienced a sustained decline, likely linked to rural depopulation, mechanization, and limited generational renewal in the agricultural sector. The geographic distribution remains highly concentrated in specific interior regions such as Aragon and Navarra.

These patterns reinforce the need for proactive reskilling and rural development policies, particularly in territories where the decline of primary-sector and micro-enterprise occupations risks deepening economic and demographic stagnation.

Figure 30: Five fastest-declining occupation groups (2014-2024, EPA)

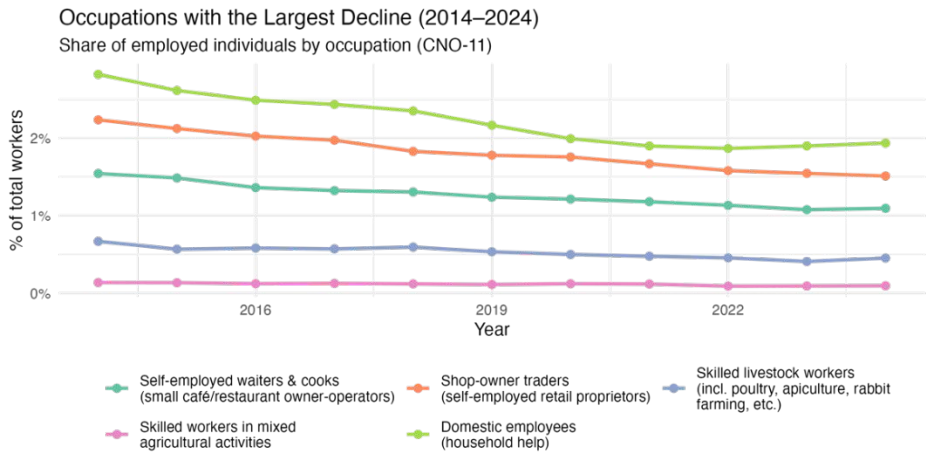
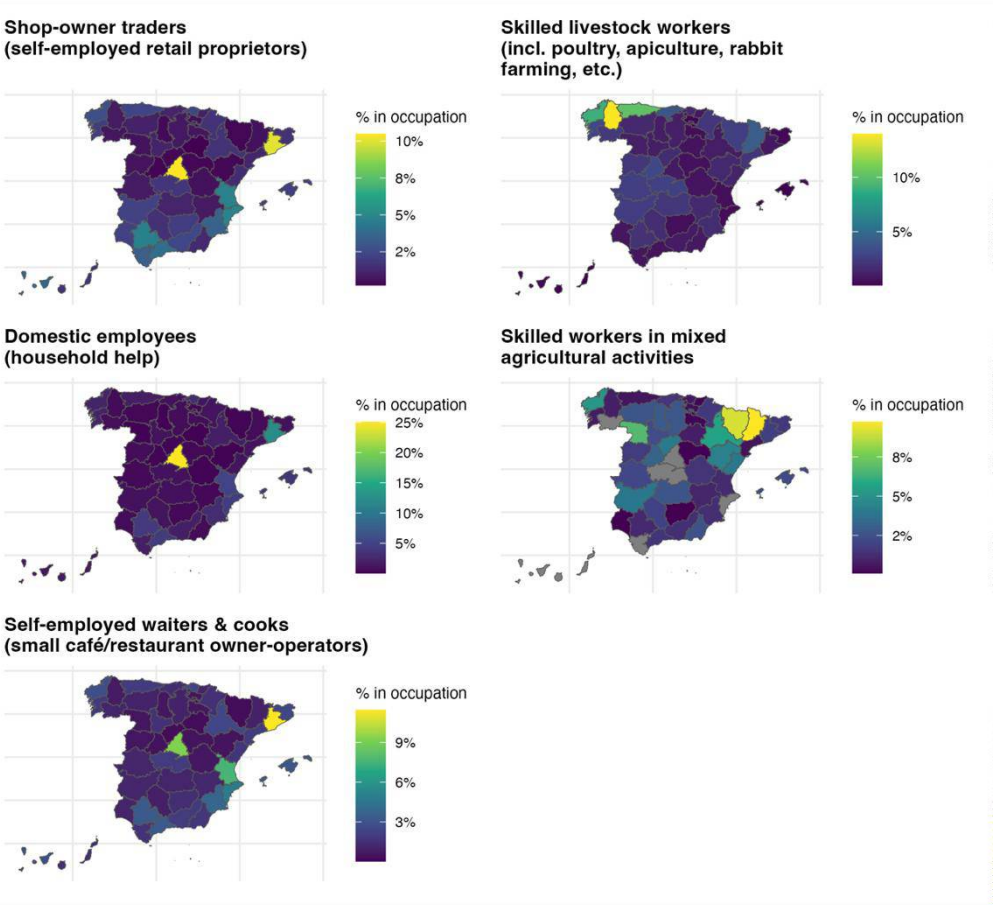


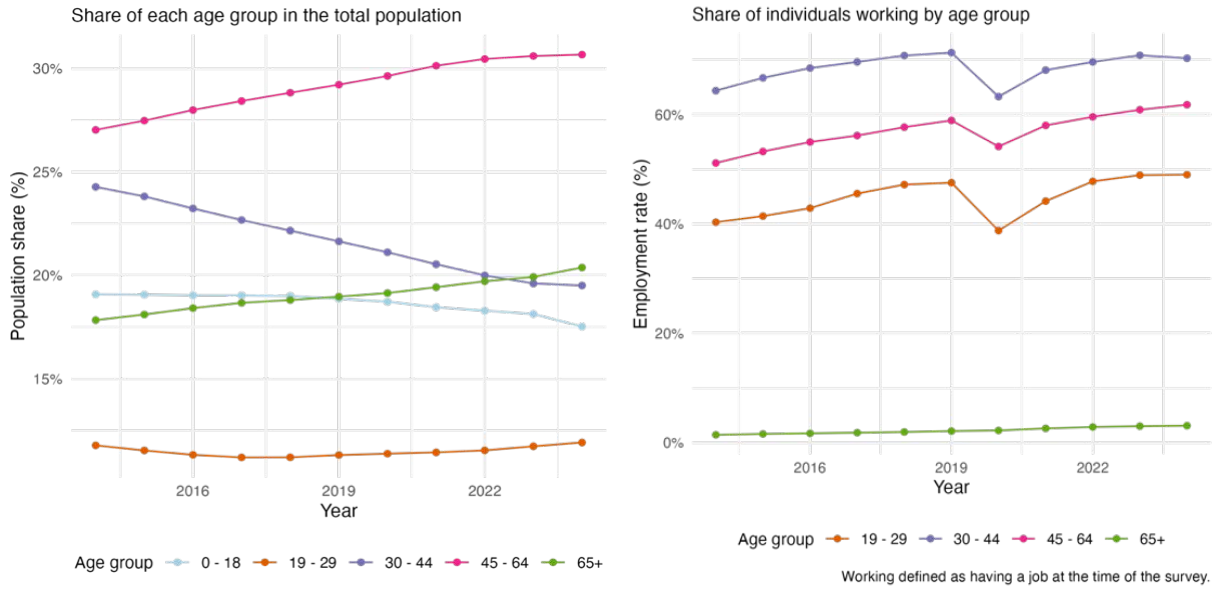
Figure 31: Geographic distribution of the fastest-declining occupation groups (2021-2024, EPA)



A.8 Additional Research Topic: Labor Market Implications of Demographic Change

Spain's demographic transition is poised to shape the country's labor market for years to come. As illustrated in Figure 32, the share of the population aged 45 and over has increased steadily over the past decade. The share of population aged 0-18 and 3044 has decreased, and the share aged 19-29 has presented small changes. The gradual shift in the age structure carries significant implications for labor supply, workforce renewal, and the design of social and employment policies. One of the most direct effects of aging is the rise in the dependency ratio, which reduces the relative size of the economically active population. While Spain has experienced a positive trend in employment rates across all age groups above 19 years old (Figure 32) – helping to offset some of this demographic pressure – there are natural limits to how much participation can increase, particularly among older adults nearing retirement age. Sustaining productivity growth and public financing in this context will require not only continued labor market inclusion but also strategies to attract and retain working-age individuals, including through migration.

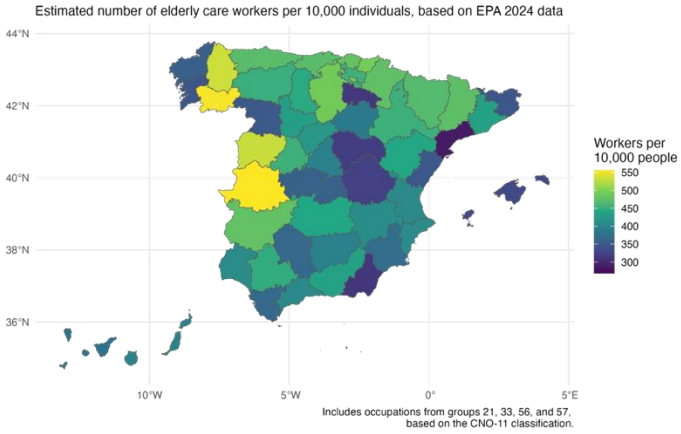
Figure 32: Population and employment rates by age group over time (EPA)



At the same time, the aging of the population has the potential to generate new labor demand, particularly in the care economy. As seen in the figures below, the highest concentrations of elderly individuals (aged 65+ and 75+) are located in Galicia, Asturias, and Castille and León. These same regions also report a somewhat higher density of elderly care workers, suggesting some degree of alignment between demographic need and labor supply. However, given the projected acceleration of aging in these territories, additional efforts may be required to expand and professionalize the care workforce, ensure territorial equity, and address the social and economic vulnerabilities in rural and semi-rural areas.

Figure 33: Share of population aged 65 and 75 and over by province (EPA, 2024)

Figure 34: Distribution of elderly care workers by province (EPA, 2024)



Ultimately, demographic change represents both a constraint and an opportunity for Spain's labor market. Anticipating workforce gaps in health, care, and support services will be essential for resilience, while enabling greater regional mobility and migrant labor participation may offer partial solutions to mitigate localized shortages and support balanced territorial development.